STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: June 28, 2018

FROM: Matt Urban
Wetlands Program Manager

AT (OFFICE): Department of Transportation
Bureau of Environment

SUBJECT Dredge & Fill Application
Alton, 41352

TO Gino Infascelli, Public Works Permitting Officer
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the application package prepared by NH DOT Bureau of Highway Design for the subject major impact project. This project is classified as major per Env-Wt 303.02 (i). The project is located on NH Route 11 in the Town of Alton, NH. The proposed work consists of replacing an existing hybrid 48" cmp at the inlet and 4'h x 3'w stone box culvert at the outlet with a 6'h x 6'w concrete box culvert with 2' of natural embedment. The replacement structure will be constructed approximately 6 ft west of the existing alignment with a slight skew which will improve the alignment of the stream, improve connectivity and it will allow the Department to utilize the existing crossing as a clean water bypass while the new structure is being constructed.

This project was reviewed at the Natural Resource Agency Coordination Meeting on February 21st 2018. A copy of the minutes has been included with this application package. A copy of this application and plans can be accessed on the Departments website via the following link: http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/wetland-applications.htm

Mitigation is not anticipated for this project. At the February 21st Natural Resource Agency Meeting the DOT and DES agreed that the loss of stream channel and bank was offset by the newly created stream channel and bank with the proposed stream realignment. Channel material is going to be simulated in accordance with the spec that has been provided. Banks will be vegetated with humus and seed.

A payment voucher has been processed for this application (Voucher #533822) in the amount of $242.80.

The lead people to contact for this project are Tobey Reynolds, Bureau of Highway Design (271-2171 or Tobey.Reynolds@dot.nh.gov) or Matt Urban, Wetlands Program Manager, Bureau of Environment (271-3226 or matt.urban@dot.nh.gov).

If and when this application meets with the approval of the Bureau, please send the permit directly to Matt Urban, Wetlands Program Manager, Bureau of Environment.

MRU:sel
Enclosures

cc:
BOE Original
Town of Alton (4 copies via certified mail)
David Trubey, NH Division of Historic Resources (Cultural Review Within)
Bureau of Construction
Carol Henderson, NH Fish & Game (via electronic notification)
Maria Tur, US Fish & Wildlife (via electronic notification)
Mark Kern, US Environmental Protection Agency (via electronic notification)
Michael Hicks, US Army Corp of Engineers (via electronic notification)
Kevin Nyhan, BOE (via electronic notification)

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NHDES-W-06-012

WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau
Land Resources Management

Check the status of your application: www.des.nh.gov/onestop

RSA/Rule: RSA 482-A/ Env-Wt 100-900

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No. Check No.: Amount Initials:

1. REVIEW TIME: Indicate your Review Time below. To determine review time, refer to Guidance Document A for instructions.

☒ Standard Review (Minimum, Minor or Major Impact) ☐ Expedited Review (Minimum Impact only)

2. MITIGATION REQUIREMENT:

If mitigation is required a Mitigation-Pre Application meeting must occur prior to submitting this Wetlands Permit Application. To determine if Mitigation is Required, please refer to the Determine if Mitigation is Required Frequently Asked Question.

Mitigation Pre-Application Meeting Date: Month: __ Day: __ Year: ____

☐ N/A - Mitigation is not required

3. PROJECT LOCATION:

Separate wetland permit applications must be submitted for each municipality that wetland impacts occur within.

ADDRESS: **NH Route 11**			TOWN/CITY: **Alton**
TAX MAP: **N/A**	BLOCK: **N/A**	LOT: **N/A**	UNIT: **N/A**
USGS TOPO MAP WATERBODY NAME: **Batchelder Brook** ☐ NA		STREAM WATERSHED SIZE: **0.98 sq mile** ☐ NA	
LOCATION COORDINATES (If known): **N385742.0866, E1074895.0436** ☐ Latitude/Longitude ☐ UTM ☒ State Plane			

4. PROJECT DESCRIPTION:

Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. DO NOT reply "See Attached" in the space provided below.

A culvert replacement project is located in Alton, just east of the Gilford/Alton town line. The project is to replace an existing hybrid 48" cmp at the inlet and 4'h x 3'w stone box culvert at the outlet. The replacement will be a 6'h x 6'w concrete box culvert with 2' of natural embedment, located approximately 6-feet west and with a slight skew from the existing culvert.

5. SHORELINE FRONTAGE:

☒ NA This does not have shoreline frontage. SHORELINE FRONTAGE:

Shoreline frontage is calculated by determining the average of the distances of the actual natural navigable shoreline frontage and a straight line drawn between the property lines, both of which are measured at the normal high water line.

6. RELATED NHDES LAND RESOURCES MANAGEMENT PERMIT APPLICATIONS ASSOCIATED WITH THIS PROJECT:

Please indicate if any of the following permit applications are required and, if required, the status of the application.

To determine if other Land Resources Management Permits are required, refer to the Land Resources Management Web Page.

Permit Type	Permit Required	File Number	Permit Application Status
Alteration of Terrain Permit Per RSA 485-A:17	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Individual Sewerage Disposal per RSA 485-A:2	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Subdivision Approval Per RSA 485-A	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Shoreland Permit Per RSA 483-B	☒ YES ☐ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED

7. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:

See the Instructions & Required Attachments document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID: NHB **17** - **1914** .

b. ☐ Designated River the project is in ¼ miles of: _____ ; and
date a copy of the application was sent to the Local River Management Advisory Committee: Month: __ Day: __ Year: ____
☒ N/A

8. APPLICANT INFORMATION (Desired permit holder)		
LAST NAME, FIRST NAME, M.I.: **State of New Hampshire (Tobey Reynolds)**		
TRUST / COMPANY NAME: **NH Department of Transportation**	MAILING ADDRESS: **7 Hazen Drive, PO box 483**	
TOWN/CITY: **Concord**	STATE: **NH**	ZIP CODE: **03302-0483**
EMAIL or FAX: **(603) 271-7025**	PHONE: **(603) 271-2171**	
ELECTRONIC COMMUNICATION: By initialing here: TR, I hereby authorize NHDES to communicate all matters relative to this application electronically.		

9. PROPERTY OWNER INFORMATION (If different than applicant)		
LAST NAME, FIRST NAME, M.I.:		
TRUST / COMPANY NAME:	MAILING ADDRESS:	
TOWN/CITY:	STATE:	ZIP CODE:
EMAIL or FAX:	PHONE:	
ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.		

10. AUTHORIZED AGENT INFORMATION		
LAST NAME, FIRST NAME, M.I.:	COMPANY NAME:	
MAILING ADDRESS:		
TOWN/CITY:	STATE:	ZIP CODE:
EMAIL or FAX:	PHONE:	
ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.		

11. PROPERTY OWNER SIGNATURE:
See the Instructions & Required Attachments document for clarification of the below statements

By signing the application, I am certifying that:

1. I authorize the applicant and/or agent indicated on this form to act in my behalf in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.
2. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document.
3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.
4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.
5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.
6. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.47.
7. I have submitted a Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) to the NH State Historic Preservation Officer (SHPO) at the NH Division of Historical Resources to identify the presence of historical/ archeological resources while coordinating with the lead federal agency for NHPA 106 compliance.
8. I authorize NHDES and the municipal conservation commission to inspect the site of the proposed project.
9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.
10. I understand that the willful submission of falsified or misrepresented information to the New Hampshire Department of Environmental Services is a criminal act, which may result in legal action.
11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
12. The mailing addresses I have provided are up to date and appropriate for receipt of NHDES correspondence. NHDES will not forward returned mail.

Property Owner Signature	Print name legibly	Date
Tobey Reynolds	Tobey Reynolds	6/25/2018

MUNICIPAL SIGNATURES

12. CONSERVATION COMMISSION SIGNATURE

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.

⇨	Print name legibly	Date

DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission's signature is obtained in the space above.
2. Expedited review requires the Conservation Commission signature be obtained **prior** to the submittal of the original application to the Town/City Clerk for signature.
3. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, the application is not eligible for expedited review and the application will be reviewed in the standard review time frame.

13. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 2014), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

⇨ Town/City Clerk Signature	Print name legibly	Town/City	Date

DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3,I

1. For applications where "Expedited Review" is checked on page 1, if the Conservation Commission signature is not present, NHDES will accept the permit application, but it will NOT receive the expedited review time.
2. IMMEDIATELY sign the original application form and four copies in the signature space provided above;
3. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
4. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board; and
5. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

1. Submit the single, original permit application form bearing the signature of the Town/ City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery.

14. IMPACT AREA:
For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact
Permanent: impacts that will remain after the project is complete.
Temporary: impacts not intended to remain (and will be restored to pre-construction conditions) after the project is complete.

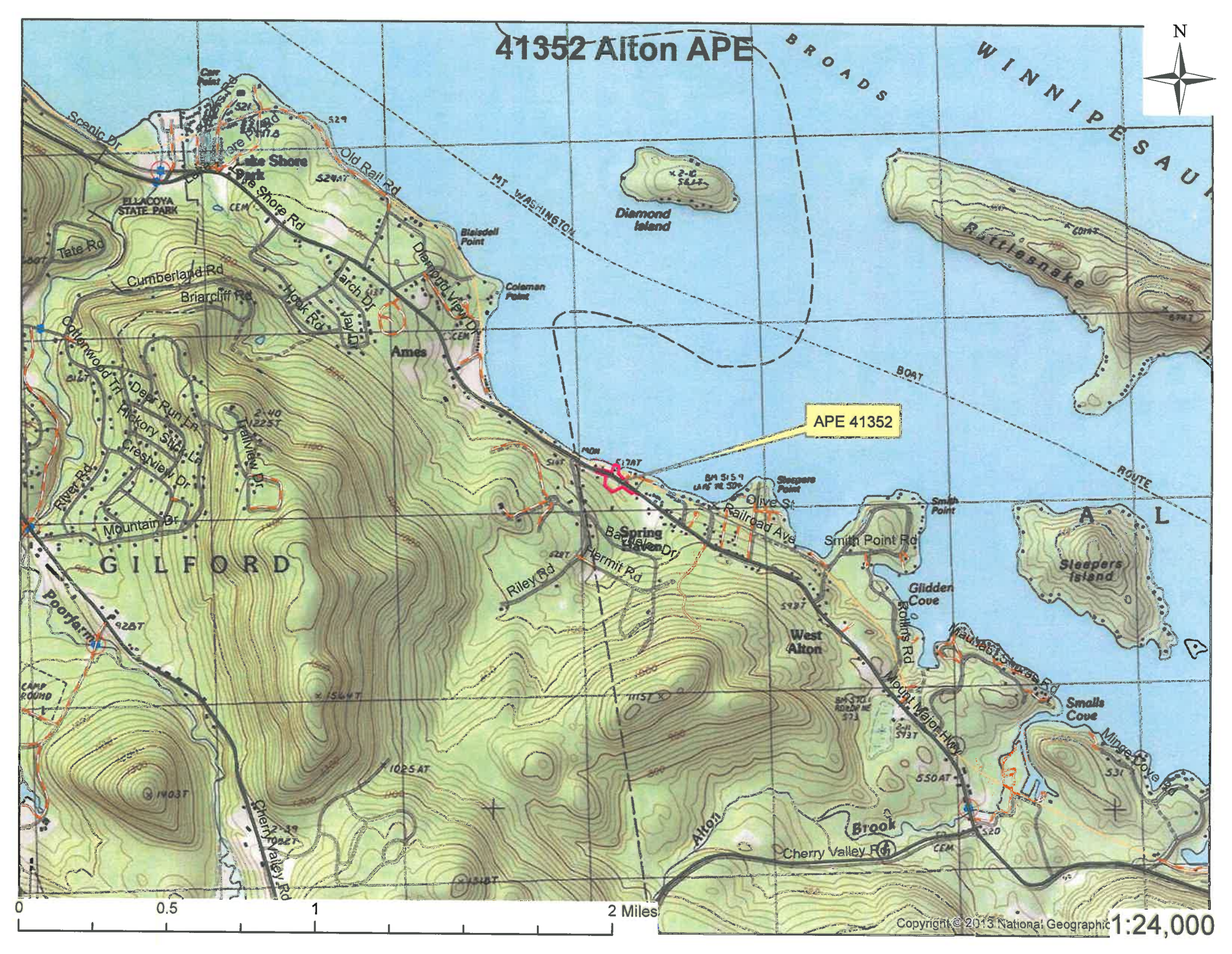
JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.		TEMPORARY Sq. Ft. / Lin. Ft.	
Forested wetland	5 / 0	☐ ATF	134 / 0	☐ ATF
Scrub-shrub wetland		☐ ATF		☐ ATF
Emergent wetland		☐ ATF		☐ ATF
Wet meadow		☐ ATF		☐ ATF
Intermittent stream		☐ ATF		☐ ATF
Perennial Stream / River	402 / 46	☐ ATF	236 / 27	☐ ATF
Lake / Pond		☐ ATF		☐ ATF
Bank - Intermittent stream		☐ ATF		☐ ATF
Bank - Perennial stream / River	241 / 94	☐ ATF	196 / 57	☐ ATF
Bank - Lake / Pond		☐ ATF		☐ ATF
Tidal water		☐ ATF		☐ ATF
Salt marsh		☐ ATF		☐ ATF
Sand dune		☐ ATF		☐ ATF
Prime wetland		☐ ATF		☐ ATF
Prime wetland buffer		☐ ATF		☐ ATF
Undeveloped Tidal Buffer Zone (TBZ)		☐ ATF		☐ ATF
Previously-developed upland in TBZ		☐ ATF		☐ ATF
Docking - Lake / Pond		☐ ATF		☐ ATF
Docking - River		☐ ATF		☐ ATF
Docking - Tidal Water		☐ ATF		☐ ATF
Vernal Pool		☐ ATF		☐ ATF
TOTAL	648 / 140		566 / 84	

15. APPLICATION FEE: See the Instructions & Required Attachments document for further instruction

☐ Minimum Impact Fee: Flat fee of $ 200

☒ Minor or Major Impact Fee: Calculate using the below table below

Permanent and Temporary (non-docking)	**1,214** sq. ft.	X	$0.20 =	**$ 242.80**
Temporary (seasonal) docking structure:	sq. ft.	X	$1.00 =	**$ 0.00**
Permanent docking structure:	sq. ft.	X	$2.00 =	**$ 0.00**
Projects proposing shoreline structures (including docks) add $200			=	**$ 0.00**
			Total =	**$ 242.80**
The Application Fee is the above calculated Total or $200, whichever is greater			=	**$ 242.80**


41352 Alton APE
N
APE 41352
Diamond Island
Rattlesnake
Sleepers Island
GILFORD
ALTON
Ames
West Alton
Spring Bay
Glidden Cove
Smalls Cove
Lake Shore Park
ELLACOYA STATE PARK
Scenic Dr
Old Rail Rd
Lake Shore Rd
Tate Rd
Cumberland Rd
Briarcliff Rd
Hook Rd
Larch Dr
Diamond View Dr
Blaisdell Point
Coleman Point
Cottonwood Trl
Deer Run Ln
Hickory Stick Ln
Crestview Dr
Trailview Dr
River Rd
Mountain Dr
Riley Rd
Hermit Rd
Railroad Ave
Olive St
Smith Point
Smith Point Rd
Sleepers Point
Roberts Rd
Mount Major Hwy
Mingle Cove
Poorfarm
Cherry Valley Rd
Alton Brook
MT WASHINGTON
BROADS
WINNIPESAUKEE
BOAT ROUTE
0
0.5
1
2 Miles
1:24,000
Copyright © 2013 National Geographic

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

WETLANDS PERMIT APPLICATION – ATTACHMENT A
MINOR AND MAJOR - 20 QUESTIONS

Land Resources Management
Wetlands Bureau

Check the Status of your application: www.des.nh.gov/onestop

RSA/ Rule: RSA 482-A, Env-Wt 100-900

Env-Wt 302.04 Requirements for Application Evaluation - For any major or minor project, the applicant shall demonstrate by plan and example that the following factors have been considered in the project's design in assessing the impact of the proposed project to areas and environments under the department's jurisdiction. Respond with statements demonstrating:

1. The need for the proposed impact.

This project proposes to replace an existing hybrid culvert: 48" cmp at the inlet and 4'h x 3'w stone box (1918) at the outlet. The culvert is located in Alton and crosses under NH Route 11, just east of the Alton/Gilford town line.

The stone culvert is structurally deficient, deterioration of the culvert is beyond the point where maintenance is feasible. Replacement has been deemed necessary in order to keep the integrity of NH Route 11 safe for the travelling public.

All wetland impacts are due to the replacement of the existing structure.

2. That the alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site.

The stones on the top of the existing 4'h x 3'w stone box culvert portion of the hybrid culvert are beginning to cave inward. This deterioration is beyond rehabilitation measures and therefore needs to be replaced. The proposed alternative is to replace the existing structure with a 6'h x 6'w x 45'l concrete box culvert. This culvert will be placed 6-feet west of the existing culvert at a slight skew to remove the abrupt bends in the stream which will improve stream connectivity. This alignment also allows the existing crossing to be used as clean water bypass during the construction of the proposed box culvert.

This preferred alternative was chosen for several reasons, one of which was due to the low roadway cover over the culvert which constricted/limited the size and type of replacment structure feasible at this location. Additionally the downstream former railbed (1890) culvert is in close proximity, only 85-feet downstream of the project culvert. This former railbed culvert is in good condition and therefore we did not want to impact.

3. The type and classification of the wetlands involved.

Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded/Saturated (PFO1E)

Riverine, Lower Perennial, Unconsolidated Bottom, Cobble-Gravel and Sand (R2UB12)

Bank

4. The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters.

The wetlands impacted primarily involve the streambed and assosciated banks of Batchelder Brook flowing under NH Route 11. Once Batchelder Brook crosses under NH Route 11 it then flows to the north through a channelized stream for approximately 85-feet before it outlets into Lake Winnipesaukee. Impacts associated with this project will not negatively effect nearby wetlands and surface waters. Drainage patterns will be maintained and it is not expected that hydrology will change.

5. The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area.

The impacted and nearby wetlands are not rare or uncommon in NH. Riverine and Palustrine Forested wetlands are common in New Hampshire.

6. The surface area of the wetlands that will be impacted.

Bank - 241 s.f. permanent; 196 s.f. temporary

Riverine - 402 s.f. permanent; 236 s.f. temporary

Palustrine Forested - 5 s.f. permanent; 134 s.f. temporary

7. The impact on plants, fish and wildlife including, but not limited to:
   a. Rare, special concern species;
   b. State and federally listed threatened and endangered species;
   c. Species at the extremities of their ranges;
   d. Migratory fish and wildlife;
   e. Exemplary natural communities identified by the DRED-NHB; and
   f. Vernal pools.

a) No rare or special concern species were identified within the proposed project area.

b) The US Fish and Wildlife IPac review showed both Small Whorled Pogonia and the Northern Long Eared Bat (NLEB).

For the Northern Long Eared bat (NLEB), tree clearing will be limited to winter time clearing. Coordination on the NLEB was done through the U.S. Fish and Wildlife Service. The project as proposed is within the scope and adheres to the criteria of the FHWA, FRA, FTA Programmatic Consultation, including the implementation of applicable avoidance and minimization measures, and is not likely to adversely affect (NLAA) the threatened Northern Long Eared Bat.

The small whorled pogonia was discussed further with USFWS, it was determined no survey would be necessary. The nearest record is 4.5 miles away.

c) There are no species known to be at the extremities of their ranges located in the project area or the surrounding areas.

d) Migratory fish and wildlife will be protected under the direction of NH Fish and Game. The Aquatic Restoration Mapper indicates Wild Eastern Brook Trout at West Alton Brook, 1.8 miles from the project. Large fish (species unknown) were identified upstream and downstream of the culvert during project site visits. Smelt spawning should be taken into consideration during construction. No stream construction will occur from April - Early May.

e) The Department has coordinated with DRED and the results of the NHB review revealed no records in the area.

f) There were no vernal pools identified and/or delineated in the project area.

8. The impact of the proposed project on public commerce, navigation and recreation.

The improved crossing under NH Rotue 11 will continue to be maintained and public commerce and mobility will continue. The majority of the construction activities will take place during a nighttime roadway closure, for a maximum of 5 nights. Each morning the roadway will be brought up to a crushed gravel surface so that two-way traffic can be re-established.

9. The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake, the applicant shall be required to indicate the type of material to be used and the effect of the construction of the wall on the view of other users of the lake.

This project does not interfere with the aesthetic interest of the general public. The work is along and within an existing transportation corridor and does not involve the application of atypical construction methods/techniques.

10. The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel, the applicant shall be required to document the extent to which the dock would block or interfere with the passage through this area.

As noted in # 8, no impacts. This project will have permanent drainage easements beyond state owned Right of Way to two parcels. One located at the inlet and one at the outlet of the crossing.

11. The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties.

The project will impact two properties outside of existing ROW limits, as note in #10. NHDOT will obtain permanent easements for these properties. Disturbed streambed and bank areas will be stabilized with stone and matting to minimize stream erosion upstream and downstream.

12. The benefit of a project to the health, safety, and well being of the general public.

The project will perpetuate the safety of NH Route 11 at this location by improving the structural integrity of the crossing under the roadway. Additionally, the increased cross-sectional area will improve water passage.

13. The impact of a proposed project on quantity or quality of surface and ground water. For example, where an applicant proposes to fill wetlands the applicant shall be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site.

This project should result in reduced bank erosion and improved sediment transport as a result of providing a greater cross-sectional area. The proposed design will also not alter the current quantity and quality of the surface water or groundwater entering the system because the proposed work will not increase the amount of impervious surface within the project area. In addition the proposed layout will aid in accommodating a clean water bypass during construction as the existing culvert will be used to carry water during construction of the new proposed culvert which will be constructed 6-feet west of the existing. Temporary pipe extensions will be added to the existing crossing at the inlet and outlet to divert the water around the construction and into the stream to allow for area for the headwall and wingwalls to be constructed. The temporary pipe extensions shall be sized to accommodate the 2-year storm at a minimum, therefore the pipe extensions should be 36"-48" corrugated plastic pipe. Once the project culvert is constructed, the existing hybrid culvert will be removed. Best management practices will be used to prevent any adverse effect to water quality during construction.

14. The potential of a proposed project to cause or increase flooding, erosion, or sedimentation.

The design will not cause or increase flooding, erosion, or sedimentation. The proposed design was designed with the intention to reduce the risk of overtopping of the roadway. This 6'h x 6'w sturcutre provides a 4'h x 6'w hydraulic opening which will be less restrictive than the existing hybrid culvert: 48" cmp (inlet) and 4'h x 3'w stone box (outlet). The proposed structure can pass the 50 year storm.

Additionally, headwalls will be constructed at both the inlet and outlet which will aid in protecting and stabilizing the banks. Disturbed bank and channel areas will be stabilized with geotextile material and stone; fill areas will receive humus and will be re-seeded.

15. The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards.

All the current flow and water that is transported through this system will continue with/after the replacement. No new water sources will be introduced. There is not enough energy within Batchelder Brook to produce waves or for water to be redirected.

16. The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted.

N/A. The abutters would not be constructing a similar highway design project. There are no cumulative impacts expected from this culvert replacement project that would impact abutters. Design of this crossing minimizes adverse impacts while improving roadway safety and hydraulic capacity.

17. The impact of the proposed project on the values and functions of the total wetland or wetland complex.

The proposed work was designed to minimize the impacts to wetlands to the maximum extent practicble. The remaining wetland systems will continue to serve the functions and values they do today.

18. The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication.

This project is not located in or near any of the following Natural Register of Natural Landmarks listed on the National Register: Lake Umbagog East Inlet and Floating Island, Pondicherry Wildlife Refuge, Franconia Notch, Nancy Brook Scenic Area, Heath Pond Bog, Madison Boulder, White Lake Pitch Pine Forest, Mount Monadnock, Rhododendron Natural Area, and Spruce Hole Bog.

19. The impact upon the value of areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.

This project is not located in or near any of the above mentioned protected areas.

20. The degree to which a project redirects water from one watershed to another.

This project will not redirect water from one watershed to another. See #15 for additional information.

Additional comments

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: February 21, 2018
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Matt Urban
Sarah Large
Ron Crickard
Steve Johnson
Doug Locker
Tobey Reynolds
Rebecca Martin
Leah Savage
Zachary Schmidt
Trina Russo
Don Lyford
Bill Saffian
Trent Zanes
John Butler
Joe Adams
Marc Laurin
Wendy Johnson
Jon Evans
Kevin Nyhan
Kirk Mudgett
Mark Hemmerlein
Ron Kleiner

ACOE
Rick Cristoff

EPA
Mark Kern

Federal Highway
Jamie Sikora

NHDES
Gino Infascelli
Lori Sommer
Tim White

NHF&G
Carol Henderson

NH Natural Heritage Bureau
Amy Lamb

Consultants/Public Participants
Christine Perron
Brian Colburn
Jennifer Zorn
Ed Weingartner
Vicki Chase
Christopher Fourneir
Jed Merrow
Kevin Thatcher
Bill Ashford

(When viewing these minutes online, click on an attendee to send an e-mail)

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:
(minutes on subsequent pages)

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

Steve Johnson showed photos with the wetlands delineation, the interior of the stone box, the upstream and downstream channel and the structure inlet and outlet along with a sketch showing the proposed impacts. Steve noted that the delineation shown was done at a time when Bridge Maintenance was delineating and that the NHDOT Bureau of Environment would re-delineate prior to submission of the permit.

Steve Johnson also noted that the flow of the stream had eroded the south west wingwall. It was noted the plan for the proposed impacts was incorrect, and that the rip rap in the channel should be at the downstream outlet of the culvert, no channel riprap was required at the upstream inlet.

Carol Henderson asked if there would be a diversion pipe used for this project. Steve Johnson said that a diversion pipe would be necessary to do the work required. Carol also asked what time of year it would take place and how long. Steve indicated that it would be longer than two months, and the nature of the work would require it to be done in the summer.

It was determined that mitigation would be required on this project for the downstream impacts unless it could be determined that there was rock already present where it is proposed to be placed.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Tamworth, #41813 (Non-Federal)

Steve Johnson provided overview of the project. The existing structure is a concrete tee beam bridge constructed in 1937 with a 46' span that carries NH 16 over Chocorua River Tamworth 097/165). The drainage area is 14.3 square miles and there were no NHB records.

The proposed work includes placing sandbag cofferdams along the outside wings of the bridge in order to place rip rap. The embankment is sloughing adjacent to the wingwalls.

Steve Johnson showed photos with the wetlands delineation, the upstream and downstream channel and the structure, and the wingwalls along with a sketch showing the proposed impacts.

It was stated that there is existing stone in some locations, and that the reason for the protection is because there are concerns about the stability of the project embankment. No further comments or questions were made regarding this project.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Alton, #41352 (Non-Federal)

Leah Savage provided an overview of the 41352 project, which proposes to replace a hybrid culvert located in Alton on NH Route 11 located east of the Gilford-Alton town line. In this area NH Route 11 is quite narrow. The culvert is comprised of three elements, at the outlet an extension of poured concrete blocks is visible and there is a corrugated metal pipe at the inlet of the structure. Between these two elements is a failing stone box culvert, 3 foot wide by 4 foot high. The original stone box culvert was constructed in 1918 and the extensions represent evidence of maintenance work/repairs. A second stone box culvert, 7'high x 3.5'wide in fairly close proximity is located

beneath the former Boston & Maine Railroad just downstream of the existing culvert. The outlet of the culvert beneath the former Boston & Maine Railroad is into Lake Winnipesaukee. The stone box portion of the culvert under NH Route 11 is in poor condition, with stones caving inward on the top of the box. Flooding/overtopping of NH Route 11 is reported to occur at the culvert only during the Mother's Day flood.

Leah Savage explained that Zack Schmidt had conducted the hydraulic analysis and that the total area that StreamStats indicated draining to the project culvert appeared to be larger than what field observations were indicating. After further investigation the design team recognized that the ditches along Riley Road near the project area actually convey water through a culvert west of the project area, removing 0.11 square miles from the NH 11 culvert's watershed. Therefore the actual watershed size is 0.98 square miles and the stream is a Tier 2 stream.

L. Savage explained that there are several factors controlling the design including a garage foundation in close proximity to the stream, closely located driveways, and aerial utility lines. Also the 1890's railroad culvert is located only 85-feet downstream which is in good condition and therefore we do not want to impact. This old railroad culvert is also potentially eligible for the national register of historic places. No impacts to the railroad culvert are proposed. There is very little cover over the culvert in this location. L. Savage commented that Lake Winnipesauke is 5 feet lower than the existing structure's outlet, so no backwater issues are anticipated. A larger structure is desirable to improve the hydraulic capacity of the crossing. If the deterioration of the crossing were not addressed, failure of the culvert is anticipated, which would likely involve emergency repair work and possible closure of NH Route 11.

L. Savage described environmental considerations for the project, including that large fish were observed upstream of the NH Route 11 culvert and in the pool downstream of the railroad culvert. She explained that the USFWS Official Species List includes the small whorled pogonia and the northern long-eared bat. USFWS had reviewed the project and commented that the small whorled pogonia is not likely to be growing in the area, so no survey for the plant was recommended. The project activities are in accordance with the NLEB 4(d) rule. L. Savage also commented that the project area is not within any special flood hazard zones.

L. Savage reviewed the various alternatives that were considered for the project. An in-kind replacement of the structure would increase the velocity of water moving through the structure and would not meet the headwater requirements for 50 year storm events. Rehabilitation of the existing structure was considered, but the deterioration of the structure was determined to be too far advanced. Twin 48 inch circular RCPs was considered, but this alternative would result in increased velocity of the stream water and would require additional wetland impacts. Also, the twin pipes could be clogged with debris. The preferred alternative is a 4 foot high by 6 feet wide box culvert with natural materials in the bottom. This option meets the headwater requirements for the 50 year and 100 year storms. The preferred alternative would include skewing the culvert to improve stream connectivity by matching into the stream's geometry. The pipe is also proposed to be extended; 5 feet at the inlet to move the headwall beyond the clear zone, eliminating the need for guardrail on the inlet side and extending the outlet by 2 feet at the outlet, to provide guardrail with an adequate platform. The existing structure is 38 feet long and the proposed is 45 feet long.

L. Savage showed a plan of where the stream is and where the preferred alternative would shift the stream.

Lori Sommer inquired if the stream bank will need to be riprapped. L. Savage explained that due to the velocity of the water, some rip rap will be necessary. The banks will be vegetated with humus and seed. L. Sommer recommended planting shrubs on the stream banks. Matt Urban recommended that, since the design team is attempting to restore the stream, the project should not be required to mitigate for the stream impacts. L. Sommer commented that this seems reasonable.

Leah Savage explained that the existing structure will be used as a clean water bypass while the new structure is being constructed. She explained that the DOT Front Office has approved night time road closures to allow the project to have a small footprint and be built quickly.

Carol Henderson commented that the stream likely has spawning smelt in the spring (late April through early May). She said construction could result in siltation which could kill smelt eggs. Tobey Reynolds agreed that construction could begin after mid-May. Carol Henderson commented that any large trout would likely move out of the area during construction and would not be impacted.

Amy Lamb inquired if the stream materials from the shift of the stream could be reused. The design team seemed to think this was a possibility.

The group agreed that the design should progress as described.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Hinsdale-Brattleboro, #12210C (A004(152))

Christine Perron began by noting that the purpose of the discussion was to provide an overview of the drainage design, proposed stormwater treatment, and preliminary wetland impacts in order to start getting direction on permitting requirements.

Tony King described the drainage design and treatment. Runoff would be collected from 95% to 99% of new pavement. Approximately 2.1 acres of pavement would be treated in NH. Two stormwater BMPs will be constructed on the NH side and will outlet into the river just north of the existing NH Route 119 bridge. A BMP will also be constructed on the VT side.

C. Perron noted that she had incorrectly stated at the November meeting that the river in the project area is listed as impaired for aluminum and copper. The impaired section of the river is actually more than 5 miles downstream and the section that runs through the project area is not listed as impaired. With this correction made, given the proposed treatment in NH and VT, she asked if there would be concerns with providing open scuppers on the proposed bridge, which would drain runoff from the bridge directly into the river. Bill Saffian added that a closed scupper drainage system on the bridge would be costly and future maintenance would be problematic. Mark Kern commented that open scuppers seemed like a reasonable approach since the river is not impaired;

Ames
Sleepers Point
Spring Haven
West Alton
RILEY RD
BACHELOR DR
HERMIT RD
ANTHONY AVE
RAILROAD AVE
SMITH PL
POLLINS RD
RIVER RD
UPLAND DR
MOUNTAIN DR
DEER RUN LN
CHERRY VALLEY RD
11
Poorfarm Brook
W Alton Brook
GRID N
1400
1500
1200
1300
1100
1000
900
800
700
600
500
SCALE IN FEET
500 0 500 1000

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

	NAME	DATE
SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	ZCS	03/201@ATE2
SHEET CHECKED	NAME3	DATE DATE3
AS BUILT DETAILS		DATE

PRELIMINARY PLANS
SUBJECT TO CHANGE
DATE 4/5/2018

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ▫ BUREAU OF HIGHWAY DESIGN

WATERSHED BOUNDARY

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
41352_USGSwatershed	41352	1	1

NH Department of Transportation
Bureau of Highway Design
Project, Alton 41352

Env-Wt 904.05 Design Criteria for Tier 2 and Tier 3 Stream Crossings
New Tier 2 Crossings;
Replacement Tier 2 Crossings that have a history of flooding;
New & Replacement Tier 3 Crossings

Please describe how the project meets the following criteria:

(a) The crossing shall be designed in accordance with the NH Stream Crossing Guidelines.

The channel is 5.3 feet below the roadway, leaving very little cover over any proposed structure, limiting the size and type of replacement structure. Upsizing the culvert to a bridge would also mean increasing the flow of water to the downstream historic railroad culvert, a 7.2'h x 4.5w (1890) stone box. This increase would result in an Adverse Effect under Section 106 and trigger the need for historic mitigation. The proposed culvert is a 6'h x 6'w x 45'l concrete box culvert with 2' natural embedment. The proposed pipe will be lengthened from 38-ft to 45-ft. The culvert will be extended 5-ft at the inlet and 2-ft at the outlet. To match into the existing stream, this change results in the culvert's inverts changing and the slope of the pipe slightly increasing from 3.2% (existing) to 3.4% (proposed). Headwalls will be installed at the inlet and outlet to improve hydraulics through the crossing and lower head loss and erosion. Additionally the culvert is being offset 6-feet to the west with a 3-degree skew to improve stream connectivity.

(b) The design shall include bed forms and stream bed characteristics necessary to cause water depths and velocities within the crossing at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the crossing.

The stream slope upstream of the culvert runs 1.5% and downstream 4.6%. Due to the lengthening of the culvert, to match into the existing stream, the culvert's inverts are changing which results in a slight increase of slope through the culvert; 3.2% (existing) to 3.4% (proposed).

(c) There shall be vegetated banks upstream and downstream of the crossing.

All temporary bank disturbance shall be returned to a vegetative state after construction.

(d) The natural alignment and gradient of the stream channel shall be preserved so as to accommodate natural flow regimes and the functioning of the natural floodplain.

The proposed culvert will be installed approximately 6-feet west of the existing crossing, at a 3-degree skew. This proposed alignment removes the curves in the stream at the inlet and the outlet of the culvert and will improve stream connectivity. This alignment also allows the existing crossing to be used as clean water bypass during the construction of the box culvert.

(e) The 100-year flood frequency shall be accommodated to ensure that there is (1) no increase in flood stages on abutting properties and (2) flow and sediment transport characteristics will not be affected in a manner that could adversely affect channel stability.

(1) When modeled in HY-8, the proposed culvert under the 100-year flow of 200-cfs has a headwater elevation that is approximately 0.13-ft above the top of roadway elevation.

This is an improvement from the existing condition as the existing model shows the headwater depth to be 0.58-ft above the top of roadway elevation at the Q100.

There is low cover over the culvert and the top of roadway elevation (513.31) is only 1.3-ft above the crown of the culvert (511.98). History has shown that the existing culvert has only overtopped the roadway during the anomaly event of the Mother's Day flood. Therefore, history would show that the proposed culvert of increased capacity would have improved results.

(2) Just 85-feet downstream from the existing culvert there is a 7.2'h x 3.5'w x 45'l (1890) stone box culvert that is located under an old rail bed. The proposed design increases our project culvert area by approximately 11.4-sf to 24 sf. This increase will improve hydraulics through our project culvert while also balancing the need to not negatively impact the condition of the culvert directly downstream. (Railbed culvert area = 25.2 sf.)

(f) A natural stream channel shall be simulated through the structure.

The proposed culvert will be embedded with 2-feet of Item 585.3401 – Simulated Streambed Material to accommodate natural sediment through the culvert to simulate the natural channel. This material shall be placed at the inlet and outlet, as well as through the proposed closed bottom structure.

(g) Sediment transport competence shall not be altered.

With a larger hydraulic opening sediment transport will be improved, but balanced with the downstream constriction of the old railbed culvert. Sediment can still be transported similar to the existing condition, see (e-2).

A Tier 2 stream crossing shall be a span structure, pipe arch embedded with stream simulation, open-bottom culvert with stream simulation, or closed-bottom culvert embedded with stream simulation.

A Tier 3 stream crossing shall be a span structure or an open-bottom culvert with stream simulation.

If any of the above criteria cannot be met, approval for an alternative design must be requested and a technical report (Env-Wt 904.09) must be included with the application package.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

DATE: May 24, 2018

FROM: Zachary Schmidt
Safety Section

AT (OFFICE): Bureau of Highway Design

SUBJECT: Alton 41352
Culvert Replacement Project

RE: **Simulated Streambed Material**
Special Provision Item 585.340X

STREAMBED MATERIAL JUSTIFICATION

The Alton 41352 culvert replacement project located in Alton on NH Route 11, approximately 800 feet east of the Gilford/Alton town line requires individual analysis for the design of the simulated streambed material that shall be placed at the inlet, outlet, and through the proposed concrete box culvert.

The existing conditions do not allow for a traditional approach to sizing the material based on observations and measurements from the upstream reach. In this situation, there is a slope break in the streambed gradient at the location of the inlet to the existing culvert. A second slope break in the streambed gradient occurs at the outlet of the existing culvert. The upstream channel has a slope of 1%, the existing culvert has a slope of 3.2% and the downstream channel has a slope of 4.6%. Therefore, gradient of the streambed increases at each location where a slope break occurs, causing an increase in velocity. Natural sediment deposition is not occurring in the existing 48" diameter CMP due to the high velocities caused by the streambed gradient increase.

For this reason we are calling for material that conforms to Item 585.2 - Class B Stone to be used in conjunction with material that conforms to that observed at the upstream reach. The Class B stone is larger than what the standard requirements call for and is needed to serve as an anchor for the sediment and smaller material placed at this location. The layer of Class B Stone will be placed approximately 1-ft thick along the bottom of the culvert. Over the top of the Class B Stone layer, material with a gradation matching that of the upstream reach as described in the Special Provision for Item 585.340X - Simulated Streambed Material Specification will be placed to a depth of 1-ft.

The combination of both the anchoring Class B Stone and the simulated upstream reach material will allow for adequate material to remain at the locations inside and outside of the culvert at all times, even during large storm events where the culvert will experience its highest velocities. In the event that a large storm flushes the small sediment through the culvert, the Class B Stone will remain in place as temporary cover to the culvert bottom while the deposition of new sediment occurs.

Alton

41352
May 24, 2018

SPECIAL PROVISION

AMENDMENT TO SECTION 585 – STONE FILL

Item 585.340X – Simulated Streambed Material

Add to Description:

1.2 This work shall consist of furnishing and placing Simulated Streambed Material at the following location on this project:

Simulated Streambed Material shall be placed at the inlet and outlet, as well as through the proposed 6' x 6' closed bottom structure, where naturally occurring streambed material does not currently exist. The material shall consist of 1' natural embedment and 1' conforming to Item 585.2 - Class B Stone.

1.2.1 A layer of material conforming to Item 585.2 - Class B Stone shall be placed throughout the bottom of the new culvert, and at the inlet and outlet, as shown on the contract plans, to a depth of 1 foot. The Simulated Upstream Reach Material shall be placed over the Class B stone as shown on the contract plans to a depth of 1 foot. The intent is to replicate the natural streambed environments of the reference reach listed above in combination with providing adequately sized stone for velocities experienced in the culvert. The percentage of specific stream bed material was determined in the field utilizing the Wolman Pebble Count methodology. The gradation of substrate particle sizes are based on the Wentworth scale as referenced in the Guidelines for Naturalized River Channel Design and Bank Stabilization.

Add to Materials:

2.1.6 Class B size stone shall conform to Item 585.2 – Class B Stone.

Simulated Upstream Reach Material shall consist the following gradation:

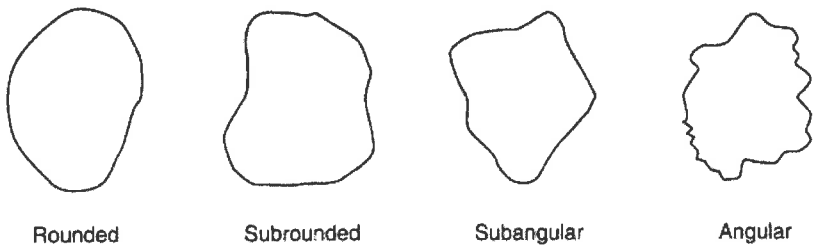
	% by Weight	
	6'x6' structure on Batchelder Brook	Sieve Sizes (in)
Item 585		
Muck	0%	See Item 647.29 – Wetland Humus specifications
Sand	32.5%	0.003 to 0.08 (smaller than head of a match)
Gravel	55%	0.08 to 2.5 (between head of match and tennis ball)
Cobble	12.5%	2.5 to 10.00 (between tennis ball and volleyball)
Boulder	0%	10.0 to > (Larger than volleyball)

Depth	12"
Shape	Sub-R

2.1.6.1 Streambed Material depth is as shown in the table except as noted in the contract plans.

2.1.6.2 Particle shape shall general conformity to:

R = Rounded, Sub-R = Subrounded, Sub-A = Subangular, A = Angular



Add to 3.1:

3.1.3 In accordance with the *Guidelines for Naturalized River Channel Design and Bank Stabilization*, specifically 2.2.1.2 Semi-Natural Form Design, the Streambed Material shall be placed directly on the existing channel floor as shown in the contract plans. In cases where scour protection or streambed anchorage material is required the scour/anchorage material shall be placed first. Then the Streambed Material shall be worked into the top 1'-0" filling voids, followed by the depth of Streambed Material specified.

Method of Measurement

Add to Method of Measurement:

4.2 Simulated Streambed Material will be measured by the cubic yard.

Basis of Payment

Add to Basis of Payment:

5.1.1 The accepted quantity of Simulated Streambed Material will be paid for at the Contract unit price per cubic yard complete in place.

Add to Pay Items and Units:

585.3401	Simulated Streambed Material	Cubic Yard
585.3402	Simulated Streambed Material	Cubic Yard

585.3403	Simulated Streambed Material	Cubic Yard
585.3404	Simulated Streambed Material	Cubic Yard
585.3405	Simulated Streambed Material	Cubic Yard

New Hampshire Natural Heritage Bureau

To: Rebecca Martin
7 Hazen Drive
PO Box 483
Concord, NH 03302

Date: 6/25/2018

From: NH Natural Heritage Bureau

Re: Review by NH Natural Heritage Bureau of request dated 6/25/2018

NHB File ID: NHB18-1976

Applicant: Rebecca Martin

Location: Tax Map(s)/Lot(s):
Alton

Project Description: This project will replace a hybrid culvert that consists of a stone box, a corrugated steel pipe and a concrete box with a new 4'x6' concrete box culvert with 2' of embedment. The proposed replacement structure would be have a natural bottom.The preferred alternative will extend the inlet headwall 5' beyond the current inlet headwall and the outlet headwall 2' beyond the existing outlet headwall.

The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

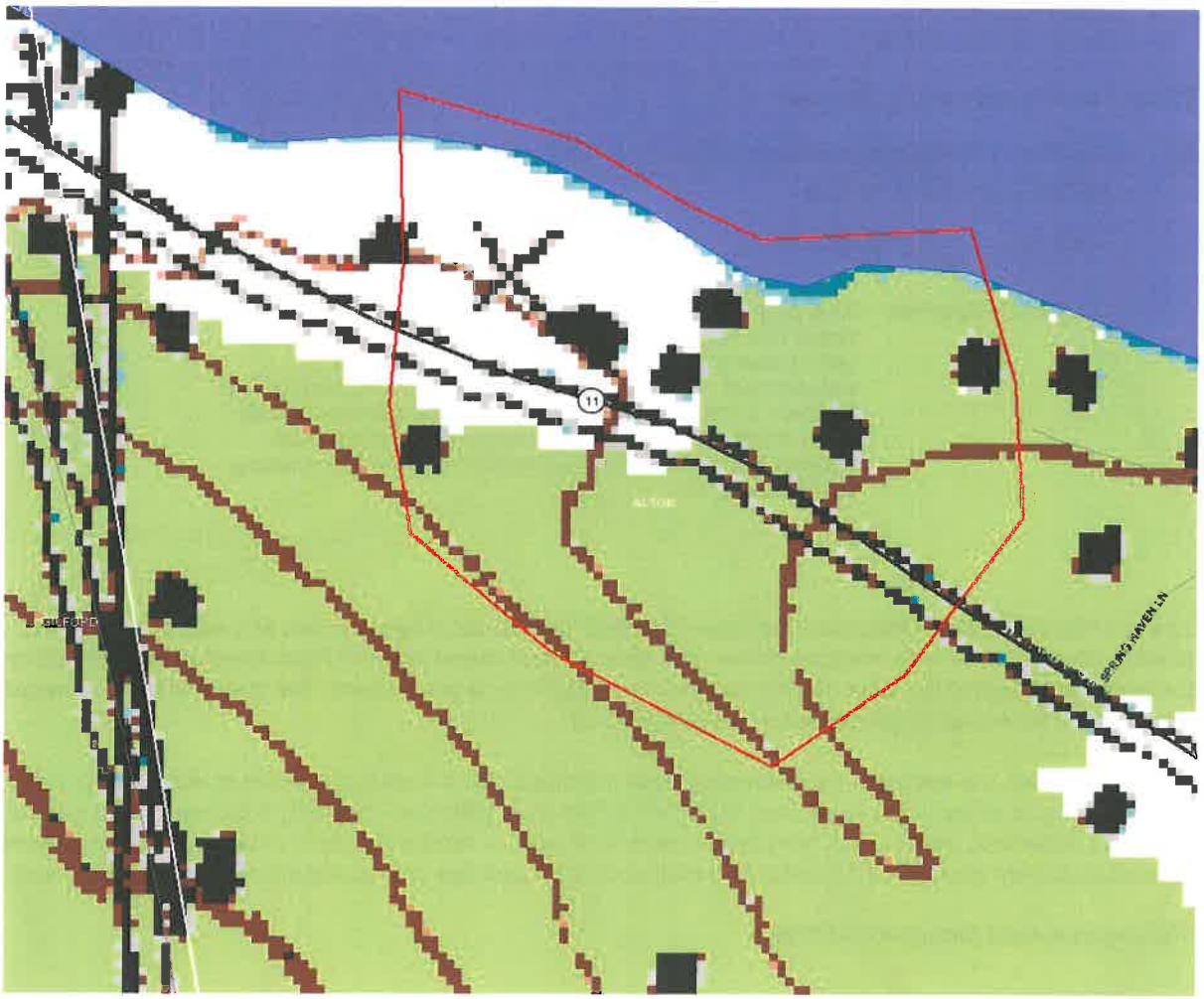
A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

This report is valid through 6/24/2019.

Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Road
Concord NH 03301

MAP OF PROJECT BOUNDARIES FOR NHB FILE ID: NHB18-1976



Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Road
Concord NH 03301

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To:
Consultation Code: 05E1NE00-2017-SLI-1876
Event Code: 05E1NE00-2017-E-04108
Project Name: 41352 Alton

June 15, 2017

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2017-SLI-1876

Event Code: 05E1NE00-2017-E-04108

Project Name: 41352 Alton

Project Type: TRANSPORTATION

Project Description: The project proposes to replace a 3' by 4' box culvert under NH Route 11 in Alton and potentially widen NH Route 11 in the area around the culvert to allow traffic control. The culvert may be replaced with a larger structure. The Boston and Maine RR culvert downstream from the box culvert may also be addressed by the proposed project. Tree clearing is likely.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.557495344094534N71.3240028844283W

Counties: Belknap, NH

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Northern Long-eared Bat *(Myotis septentrionalis)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

NAME	STATUS
Small Whorled Pogonia *(Isotria medeoloides)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1890	Threatened

Critical habitats

There are no critical habitats within your project area.

Martin, Rebecca

From: Hicks, Michael C CIV USARMY CENAE (US) <Michael.C.Hicks@usace.army.mil>
Sent: Friday, April 13, 2018 10:41 AM
To: Martin, Rebecca
Subject: RE: Alton 41352 NLEB 4(d) Form Submittal

Rebecca,

Use 4/13/18 as the submittal of the 4(d) Letter. I checked the records and I don't think I had faxed it to the USFWS on 3/7/18. Sorry

Thanks,
Mike

Michael Hicks, PM
USACE, REG DIV., BR. C
978-318-8157

-----Original Message-----
From: Martin, Rebecca [mailto:Rebecca.Martin@dot.nh.gov]
Sent: Friday, April 13, 2018 9:28 AM
To: Hicks, Michael C CIV USARMY CENAE (US) <Michael.C.Hicks@usace.army.mil>
Subject: [Non-DoD Source] RE: Alton 41352 NLEB 4(d) Form Submittal

Hello Mike,

We are currently working on the wetland permit application to submit to NH DES. I am planning to include the project submittal form that I sent to you on 3/7/18 to show coordination. In the 20 questions I would like to comment on when the submission form was sent to USFWS, so that I can say when the 30 day review period ended and that consultation has been completed.

Thank you,

Rebecca Martin
Senior Environmental Manager
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03302
(603)271-6781
Rebecca.Martin@dot.nh.gov

-----Original Message-----
From: Hicks, Michael C CIV USARMY CENAE (US) [mailto:Michael.C.Hicks@usace.army.mil]
Sent: Friday, April 13, 2018 8:34 AM
To: Martin, Rebecca
Subject: RE: Alton 41352 NLEB 4(d) Form Submittal

Rebecca,

Do you have the NHDES no. Or COE no.

Thanks,
Mike

Michael Hicks, PM
USACE, REG DIV., BR. C
978-318-8157

-----Original Message-----
From: Martin, Rebecca [mailto:Rebecca.Martin@dot.nh.gov]
Sent: Thursday, April 12, 2018 10:56 AM
To: Hicks, Michael C CIV USARMY CENAE (US) <Michael.C.Hicks@usace.army.mil>
Subject: [Non-DoD Source] Alton 41352 NLEB 4(d) Form Submittal

Hello Mike,

We are working on the wetland permit application for the Alton project. Could you please share the date when you submitted the NLEB Streamlined 4(d) Project Submittal Form for the project?

Thank you,

Rebecca Martin

Senior Environmental Manager

NH DOT Bureau of Environment

7 Hazen Drive

Concord, NH 03302

(603)271-6781

Rebecca.Martin@dot.nh.gov <mailto:Rebecca.Martin@dot.nh.gov>

Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form

Federal agencies should use this form for the optional streamlined consultation framework for the northern long-eared bat (NLEB). This framework allows federal agencies to rely upon the U.S. Fish and Wildlife Service's (USFWS) January 5, 2016, intra-Service Programmatic Biological Opinion (BO) on the final 4(d) rule for the NLEB for section 7(a)(2) compliance by: (1) notifying the USFWS that an action agency will use the streamlined framework; (2) describing the project with sufficient detail to support the required determination; and (3) enabling the USFWS to track effects and determine if reinitiation of consultation is required per 50 CFR 402.16.

This form is not necessary if an agency determines that a proposed action will have no effect to the NLEB or if the USFWS has concurred in writing with an agency's determination that a proposed action may affect, but is not likely to adversely affect the NLEB (i.e., the standard informal consultation process). Actions that may cause prohibited incidental take require separate formal consultation. Providing this information does not address section 7(a)(2) compliance for any other listed species.

Consultation Code: 05E1NE00-2017-SLI-1876

Information to Determine 4(d) Rule Compliance:	**YES**	**NO**
1. Does the project occur wholly outside of the WNS Zone[1]?	☐	☒
2. Have you contacted the appropriate agency[2] to determine if your project is near known hibernacula or maternity roost trees?	☒	☐
3. Could the project disturb hibernating NLEBs in a known hibernaculum?	☐	☒
4. Could the project alter the entrance or interior environment of a known hibernaculum?	☐	☒
5. Does the project remove any trees within 0.25 miles of a known hibernaculum at any time of year?	☐	☒
6. Would the project cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot radius from the maternity roost tree from June 1 through July 31.	☐	☒

You are eligible to use this form if you have answered yes to question #1 **or** yes to question #2 **and** no to questions 3, 4, 5 and 6. The remainder of the form will be used by the USFWS to track our assumptions in the BO.

Agency and Applicant[3] (Name, Email, Phone No.):

Rebecca Martin: NH DOT, Rebecca.Martin@dot.nh.gov , (603)271-6781

Michael Hicks: USACE, Michael.C.Hicks@usace.army.mil , (978)318-8157

Project Name: Alton 41352

Project Location (include coordinates if known): NH Route 11, east of the Gilford-Alton town line, -71.324815, 43.557907 Decimal Degrees

Basic Project Description (provide narrative below or attach additional information): The project proposes to replace a hybrid culvert located in Alton on NH Route 11 located east of the Gilford-Alton town line. In this area NH Route 11 is quite narrow. The culvert is comprised of three elements, at the outlet an extension of poured concrete blocks is visible and there is a corrugated metal pipe at the inlet of the structure. Between these two elements is a failing stone box culvert, 3 foot wide by 4 foot high. The preferred alternative is a 4 foot high by 6 feet wide box culvert with natural materials in the bottom. This

[1] http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf
[2] See http://www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html
[3] If applicable - only needed for federal actions with applicants (e.g., for a permit, etc.) who are party to the consultation.

option meets the headwater requirements for the 50 year and 100 year storms. The preferred alternative would include skewing the culvert to improve stream connectivity by matching into the stream's geometry. The pipe is also proposed to be extended; 5 feet at the inlet to move the headwall beyond the clear zone, eliminating the need for guardrail on the inlet side and extending the outlet by 2 feet at the outlet, to provide guardrail with an adequate platform. The existing structure is 38 feet long and the proposed is 45 feet long. Some tree clearing will be necessary to construct the project.

General Project Information	**YES**	**NO**
Does the project occur within 0.25 miles of a known hibernaculum?	☐	☒
Does the project occur within 150 feet of a known maternity roost tree?	☐	☒
Does the project include forest conversion[4]? (if yes, report acreage below)	☒	☐
Estimated total acres of forest conversion	0.04 acres (1600 sq ft)	
If known, estimated acres[5] of forest conversion from April 1 to October 31		
If known, estimated acres of forest conversion from June 1 to July 31[6]		
Does the project include timber harvest? (if yes, report acreage below)	☐	☒
Estimated total acres of timber harvest		
If known, estimated acres of timber harvest from April 1 to October 31		
If known, estimated acres of timber harvest from June 1 to July 31		
Does the project include prescribed fire? (if yes, report acreage below)	☐	☒
Estimated total acres of prescribed fire		
If known, estimated acres of prescribed fire from April 1 to October 31		
If known, estimated acres of prescribed fire from June 1 to July 31		
Does the project install new wind turbines? (if yes, report capacity in MW below)	☐	☒
Estimated wind capacity (MW)		

Agency Determination:

By signing this form, the action agency determines that this project may affect the NLEB, but that any resulting incidental take of the NLEB is not prohibited by the final 4(d) rule.

If the USFWS does not respond within 30 days from submittal of this form, the action agency may presume that its determination is informed by the best available information and that its project responsibilities under 7(a)(2) with respect to the NLEB are fulfilled through the USFWS January 5, 2016, Programmatic BO. The action agency will update this determination annually for multi-year activities.

The action agency understands that the USFWS presumes that all activities are implemented as described herein. The action agency will promptly report any departures from the described activities to the appropriate USFWS Field Office. The action agency will provide the appropriate USFWS Field Office with the results of any surveys conducted for the NLEB. Involved parties will promptly notify the appropriate USFWS Field Office upon finding a dead, injured, or sick NLEB.

Michael Hicks, Program Manager, USACE, REG DIV., BR. C

Signature: _____ Date Submitted: _____

Rebecca Martin, NH DOT, Environmental Manager

Signature: _____ Date Submitted: 3/7/18

[4] Any activity that temporarily or permanently removes suitable forested habitat, including, but not limited to, tree removal from development, energy production and transmission, mining, agriculture, etc. (see page 48 of the BO).
[5] If the project removes less than 10 trees and the acreage is unknown, report the acreage as less than 0.1 acre.
[6] If the activity includes tree clearing in June and July, also include those acreage in April to October.

Martin, Rebecca

From: vonOettingen, Susi <susi_vonoettingen@fws.gov>
Sent: Friday, June 16, 2017 1:36 PM
To: Martin, Rebecca
Subject: Re: Small Whorled Pogonia: Alton NH DOT Project 41352

Hi Rebecca,

Given that it is immediately next to the road, developed, it's a very small area and by the lake, I would say a survey is unnecessary. This does not appear to be likely small whorled pogonia habitat (though a little bit into the woods - say 100 feet or so - might be a different story).

Susi

Susi von Oettingen
Endangered Species Biologist
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301
(W) 603-227-6418
(Fax) 603-223-0104

www.fws.gov/newengland

On Fri, Jun 16, 2017 at 8:15 AM, Martin, Rebecca <Rebecca.Martin@dot.nh.gov> wrote:

Good morning Susi,

I am beginning the review of a culvert replacement project in Alton, NH. The Small Whorled Pogonia and the NLEB were listed on my Official Species List from IPaC. The SWP did not show up in my Natural Heritage Bureau response. I inquired with Amy Lamb at NHB and she said the closest SWP record is 4.5 miles away from the project area.

The project proposes to replace a 3' by 4' box culvert under NH Route 11 in Alton and potentially widen NH Route 11 in the area around the culvert to allow traffic control. The culvert may be replaced with a larger structure. The Boston and Maine Rail Road culvert downstream from the box culvert may also be addressed by the proposed project. Tree clearing is likely.

Consultation Code: 05E1NE00-2017-SLI-1876

I attached an aerial of the project area. It is pretty developed. Would you recommend we review the site for the SWP?

Thank you,

Rebecca Martin

Environmental Manager

NH DOT Bureau of Environment

7 Hazen Drive

Concord, NH 03302

(603)271-6781

Rebecca.Martin@dot.nh.gov

From: Lamb, Amy
Sent: Thursday, June 15, 2017 4:59 PM
To: Martin, Rebecca
Subject: RE: Official NHB Report for project NHB17-1914

Hi Rebecca,

The closest record for small whorled pogonia is over 4.5 miles away from the area mapped in NHB17-1914.

Amy

Amy Lamb
Ecological Information Specialist
(603) 271-2215 ext. 323

NH Natural Heritage Bureau
DRED - Forests & Lands
172 Pembroke Rd
Concord, NH 03301

*** PLEASE NOTE: I will be out of the office from the end of June to mid-July. *** Please plan any NHB review needs accordingly, as we will **not** be reviewing projects during this time. Thank you, and I apologize for any inconvenience this may cause.

From: Martin, Rebecca
Sent: Thursday, June 15, 2017 1:25 PM
To: Lamb, Amy
Subject: RE: Official NHB Report for project NHB17-1914

Hello Amy,

Thank you for sending the NHB Report for the Alton 41352 project. I also received an IPaC Official Species List for the project that includes the Small Whorled Pogonia- do you know if the nearest population of SWP is

US Army Corps of Engineers®
New England District

U.S. Army Corps of Engineers
New Hampshire Programmatic General Permit (PGP)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See PGP, GC 5 regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*	x	
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	x	
2.2 Are there proposed impacts to SAS, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.nhnaturalheritage.org, specifically the book Natural Community Systems of New Hampshire.		x
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	x	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)	x	
2.5 The overall project site is more than 40 acres.		x
2.6 What is the size of the existing impervious surface area?	1,988.1 sq ft	
2.7 What is the size of the proposed impervious surface area?	1,987.2 sq ft	
2.8 What is the % of the impervious area (new and existing) to the overall project site?	29.6%	
3. Wildlife	Yes	No
3.1 Has the NHB determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require a NHB determination.)		X
3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.	X	
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the PGP, GC 21?	X	

4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		x
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		
5. Historic/Archaeological Resources		
If a minor or major impact project, has a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) been sent to the NH Division of Historical Resources as required on Page 5 of the PGP?**	x	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.

** If project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

Roadway Typical: 10.5' Travel Lanes, 1-2' Shoulders – 11/20/2017

Inlet of (CMP) Culvert, Looking Upstream – 11/20/2017

Inlet (CMP) Culvert, Looking Downstream – 11/20/2017

Culvert Inlet, Looking Downstream – 7/5/2017

Inlet of Culvert, Side Slope – 11/20/2017

Outlet Side: Guardrail, stone wall, residential garden, privately owned fence – 11/20/2017

Outlet of (Stone Box) Culvert, Looking Upstream – 11/20/2017

Outlet of 4'h x 3'w stone box, Constructed 1918 – 11/20/2017

Outlet of (Stone Box) Culvert, Looking Downstream – 11/20/2017

Side Slope at (Stone Box) Culvert Outlet – 11/20/2017

Project Need: (Stone Box) Culvert Structurally Failing, Top Stones Caving In – 11/12/2015

Downstream Old Railroad Culvert, 7'h x 3.5'w Stone Box (1890), Looking Downstream – 11/20/2017

Inlet Side Slope of Railroad Culvert – 11/20/2017

Project Advertises November 6, 2018

2019 Season

1. Utility poles to be relocated/adjusted by others.
2. Install perimeter controls and define maximum work limits for all grading and drainage work.
3. Complete clearing/grubbing operations.
4. Install water diversion pipe, recommended size of 36" – 48" corrugated plastic pipe, at the inlet and outlet of the existing culvert to be used as clean water bypass during construction of the new concrete box culvert.
5. Begin nighttime road closure for proposed construction work. Traffic shall be returned to crushed gravel surface and to normal traffic patterns each morning.
6. Construct inlet/outlet of the proposed concrete box culvert, including concrete headwall, grading, and stone protection. Install 2 feet of natural embedment inside the culvert.
7. Backfill roadway material to a crushed gravel surface so the roadway can be opened to normal traffic operations during daytime hours.
8. Construct remainder of concrete box culvert, up to the inlet/outlet end, including concrete headwall, grading, and stone apron. Install 2 feet of natural embedment inside the culvert.
9. Backfill roadway material to a crushed gravel surface throughout construction so the roadway can be opened to normal traffic operations each day.
10. Once the concrete box construction is complete, shift the water diversion installation at the inlet and outlet from the existing culvert to the newly constructed concrete box.
11. Remove diversion installation pipe and all associated diversion items.
12. Remove existing hybrid 48" corrugated metal pipe and 4'h x 3'w stone box culvert, including the removal of the headwall and grading.
13. Shoulder day closure:
    - Remove the existing guardrail on the north side of the roadway. Construct guardrail platform and new guardrail with end units.
    - Finish headwall installations.
14. Cold plane operations for pavement matches at the beginning and end of the project limits.
15. Final pavement course through project limits.
16. Reestablish slopes with seed and humus.

Anticipated Completion: October 2019

April 9, 2018

ALTON
41352

PART WT 404 CRITERIA FOR SHORELINE STABILIZATION

Shoreline stabilization is required for the replacement of the existing hybrid culvert (48" cmp at the inlet and 4'h x 3'w concrete box culvert at the outlet) which connects Batchelder Brook under NH 11 just east of the Alton/Gilford town line, adjacent to Riley Road. Outlet protection for the proposed drainage crossing replacement is required to protect and re-establish the channel and will propose stone fill within areas under the jurisdiction of the NH Wetlands Bureau and the US Army Corps of Engineers. The stone fill will be located in the channel and bank of the unnamed stream, as shown on the plans. Simulated stone will be placed in the culvert crossing itself.

Pursuant to PART Wt 404 Criteria for Shoreline Stabilization, the following addresses each codified section of the Administrative Rules:

Wt 404.01 Least Intrusive Method

No shoreland stabilization is proposed under this project.

Wt 404.02 Diversion of Water

Replacement of the project culvert will be facilitated by utilizing the existing culvert as clean water bypass during construction of the proposed 6'w x 4'h concrete box culvert.. After the concrete box culvert is constructed the water will be re-diverted to the structure while the existing hybrid culvert is removed. This will minimize erosion and impacts to the wetland area.

Wt 404.03 Vegetative Stabilization

Natural vegetation will be left undisturbed to the maximum extent possible. Newly developed slopes and disturbed areas which are flatter than 2:1 will have humus and seed applied for turf establishment, this will help stabilize the project area. Stone lined areas include the channel and bank where slopes are 2:1.

Wt 404.04 Rip-Rap

(a) Stone fill, as proposed, is shown on the attached plans to protect the newly formed channel and bank at the inlet and outlet of the culvert. The stone fill will be used to provide outlet protection for the culvert crossing and to stabilize the embankments. This is necessary to maintain the structural integrity of the culvert and roadway slopes during all flow conditions.

(b) (1-5) The enclosed Section 585 specification for Stone Fill, Class B (Item 585.2), provides the description of the material size, gradation, and construction requirements. A cross section of the stone fill showing proposed thickness and other details have been provided on the attached plans. Bedding for the stone fill will consist of either:

- Natural ground excavated to the proposed underside of the stone fill with geotextile,

  or

- Newly constructed embankments consisting of suitable excavated material in conformance with Section 203 of the Specifications.

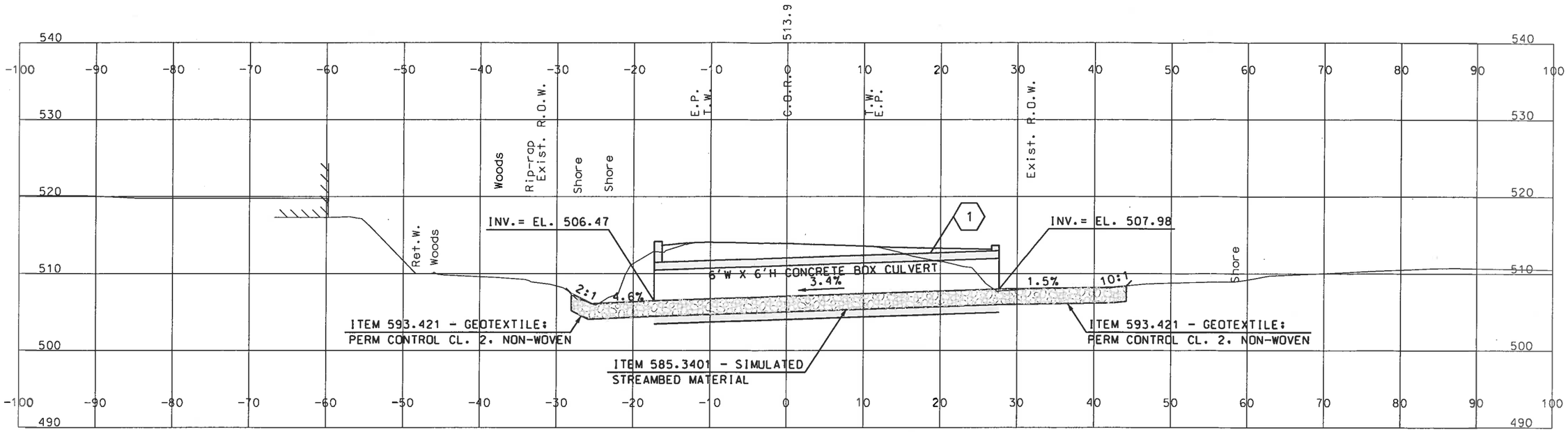
(b) (6) Enclosed are plan sheets to sufficiently indicate the relationship of the project to fixed points of reference, abutting properties, and features of the natural shoreline.

(b) (7) Stone fill is recommended for the limits shown on the enclosed plans to protect the channel and bank from erosion during flood flows and from scour during all flows, as well as slopes 2:1 and steeper that have difficulty supporting vegetation.

(c) **N/A**

(d) Stone fill for slope stabilization and for culvert protection, is proposed to extend down to and adequately keyed into the channel bottom of the unnamed stream to prevent possible undermining of the slope.

(e) Engineering plans are being provided as a part of the application for rip-rap in excess of 100 linear feet along the stream bank (approximately 140 linear feet of stone is proposed along channel and left and right stream banks, combined).



STA. 105+89 - SKEWED (PROPOSED CULVERT)

NOT TO SCALE

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	DATE	
NEW DESIGN	L. SAVAGE DATE	04/2018
SHEET CHECKED	NAME3 DATE	DATE3
AS BUILT DETAILS	DATE	

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

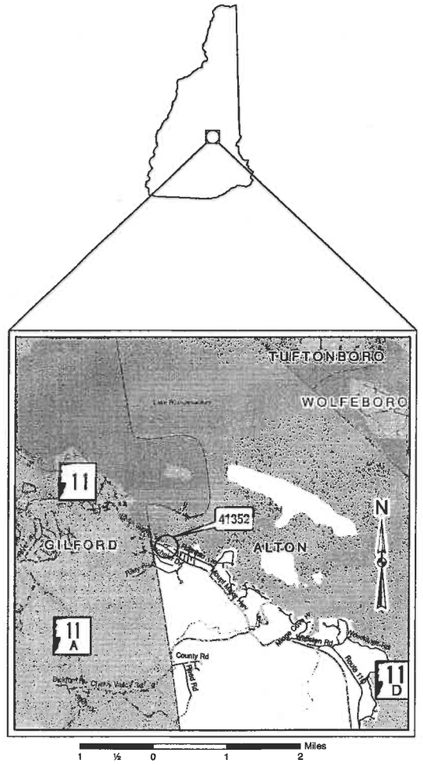
STONE DETAILS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
41352_404Permit	41352	1	1

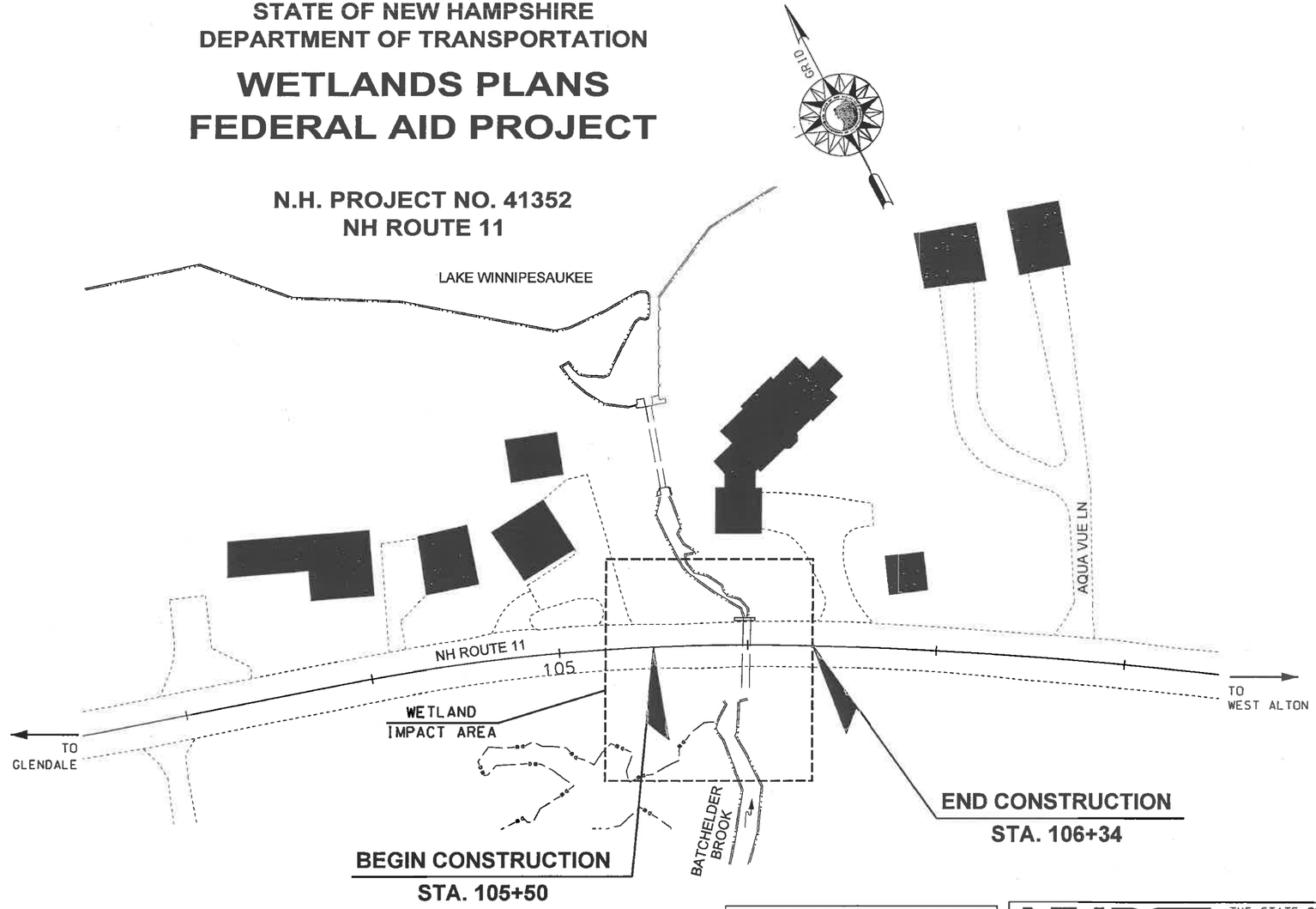
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

WETLANDS PLANS
FEDERAL AID PROJECT

N.H. PROJECT NO. 41352
NH ROUTE 11



LOCATION MAP



INDEX OF SHEETS

WETLANDS DELINEATED BY
NHBOE MATT URBAN 10/2017

THESE PLANS MEET THE REQUIREMENTS OF ENV-WT 404.
CRITERIA FOR SHORELINE STABILIZATION

SIGN: _____ DATE: 6/25/18

TOWN OF ALTON
COUNTY OF BELKNAP

SCALE: 1" = 30'
FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

NH ROUTE 11
WETLAND IMPACT PLANS
TOWN OF ALTON
06/22/2018

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	41352	1	8

DRAWN BY ZCS DATE 03/2018
CHECKED BY LMS DATE 03/2018

41352fsw.dgn Default 6/25/2018 10:53:14 AM "n34zcs"

GENERAL

EDGE OF PAVEMENT
TRAVELED WAY
PROPOSED ROADWAY
existing roadway
(pavement removed outside slope lines)

DRIVEWAYS
(label surface type)

BUILDINGS
(building to be removed)
(label house or type of building)

FOUNDATION
(label type)

LEACH FIELD
leach field

BRIDGE CROSSINGS
STREAM
OVERPASS

STEPS AND WALK
(label type)

INTERMITTENT WATER COURSE

SHORE LINE
river/stream
pond
(label name of water body)

POTENTIAL WET AREA SYMBOL

BRUSH OR WOODS LINE

TREES (PLANS)
(deciduous) (coniferous) (stump)
(show station, circumference in feet & type)

TREE OR STUMP (CROSS-SECTIONS)

HEDGE
(label type)

MONITORING WELL
mon

WELL

FLAG POLE
fp

ORIGINAL GROUND (TYPICALS)

ROCK OUTCROP

ROCK LINE (TYPICALS & SECTIONS ONLY)

GUARDRAIL (label type)
existing
PROPOSED
bgr
cgr

JERSEY BARRIER

CURB (LABEL TYPE)

STONE WALL

RETAINING WALL (LABEL TYPE)
(points toward retained ground)

FENCE (LABEL TYPE)

SIGNS
(single post)
(double post)

GAS PUMP
gp

FUEL TANK (ABOVE GROUND)
ft (label size & type)

STORAGE TANK FILLER CAP
fc

SEPTIC TANK
S

GRAVE
gr

MAILBOX
mb

VENT PIPE
vp

SATELLITE DISH ANTENNA
da

PHONE
ph

GROUND LIGHT/LAMP POST
gl lp

BORING LOCATION
B

TEST PIT
TP

INTERSTATE NUMBERED HIGHWAY
293

UNITED STATES NUMBERED HIGHWAY
3

STATE NUMBERED HIGHWAY
102

SHORELAND - WETLAND

WETLAND DESIGNATION AND TYPE
2
PUB2E

DELINEATED WETLAND
ORDINARY HIGH WATER
TOP OF BANK
TOP OF BANK & ORDINARY HIGH WATER
NORMAL HIGH WATER
WIDTH AT BANK FULL
PRIME WETLAND
PRIME WETLAND 100' BUFFER
NON-JURISDICTIONAL DRAINAGE AREA
COWARDIN DISTINCTION LINE
TIDAL BUFFER ZONE
DEVELOPED TIDAL BUFFER ZONE
HIGHEST OBSERVABLE TIDE LINE
MEAN HIGH WATER
MEAN LOW WATER
VERNAL POOL
SPECIAL AQUATIC SITE
REFERENCE LINE
WATER FRONT BUFFER
NATURAL WOODLAND BUFFER
PROTECTED SHORELAND
INVASIVE SPECIES LABEL
I.S. I
I.S. II
INVASIVE SPECIES

FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY
100 YEAR FLOODPLAIN BOUNDARY
FLOODWAY

ENGINEERING

CONSTRUCTION BASELINE
30 31 32
PC, PT, POT (ON CONST BASELINE)
PI (IN CONSTRUCTION BASELINES)
INTERSECTION OR EQUATION OF TWO LINES
ORIGINAL GROUND LINE (PROFILES AND CROSS-SECTIONS)
PROFILE GRADE LINE (PROFILES AND CROSS-SECTIONS)
SLOPE LINE
CLEARING LINE
CLEARING LINE
SLOPE LINE
SLOPE LINE (FILL)
SLOPE LINE (CUT)
PROFILES AND CROSS SECTIONS:
ORIGINAL GROUND ELEVATION (LEFT)
FINISHED GRADE ELEVATION (RIGHT)
72.5
79.14

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	41352_WetStdSymb	41352	2	8

DRAINAGE

MANHOLE

CATCH BASIN — cb

DROP INLET — di

(existing) (PROPOSED)

DRAINAGE PIPE (existing) — (label size & type)

DRAINAGE PIPE (PROPOSED)

UNDERDRAIN (existing) W/ FLUSHING BASIN — fb — (label size & type)

UNDERDRAIN (PROPOSED) W/ FLUSHING BASIN

show direction of flow

HEADER (existing & PROPOSED) — (with stone outlet protection)

END SECTION (existing & PROPOSED) — METAL or PLASTIC; RCP

OPEN DITCH (PROPOSED)

EROSION CONTROL/ STONE SLOPE PROTECTION

BOUNDARIES / RIGHT-OF-WAY

RIGHT-OF-WAY LINE — (label type)

RR RIGHT-OF-WAY LINE

PROPERTY LINE

PROPERTY LINE (COMMON OWNER) — Z

TOWN LINE — BOW / CONCORD

COUNTY LINE — COOS / GRAFTON

STATE LINE — MAINE / NEW HAMPSHIRE

NATIONAL FOREST

CONSERVATION LAND — LC

BENCH MARK / SURVEY DISK

BOUND — bnd — (PROPOSED)

STATE LINE/ TOWN LINE MONUMENT — S/L — T/L

NHDOT PROJECT MARKER

IRON PIPE OR PIN — ip

DRILL HOLE IN ROCK — dh

TAX MAP AND LOT NUMBER — 156 / 14 — 1642/341 — 6.80 Ac.±

PROPERTY PARCEL NUMBER — 12

HISTORIC PROPERTY — H

UTILITIES

existing PROPOSED

TELEPHONE POLE

POWER POLE

JOINT OCCUPANCY

MISCELLANEOUS/UNKNOWN POLE

GUY POLE OR PUSH BRACE

(plot point at face not center of symbol)

LIGHT POLE

LIGHT ON POWER POLE

LIGHT ON JOINT POLE

POLE STATUS:
REMOVE, LEAVE, PROPOSED, OR TEMPORARY AS APPLICABLE e.g.:

R L — P+04 25.0' — T+04 25.0'

RAILROAD — (label ownership)

RAILROAD SIGN

RAILROAD SIGNAL

UTILITY JUNCTION BOX — jb — JB

OVERHEAD WIRE — OW — (label type)

UNDERGROUND UTILITIES

WATER (on existing lines label size, type and note if abandoned) — W — PW

SEWER — S — PS

TELEPHONE — T — PT

ELECTRIC — E — PE

GAS — G — PG

LIGHTING — L — PL

INTELLIGENT TRANSPORTATION SYSTEM — ITS — PITS

FIBER OPTIC — FO — PFO

WATER SHUT OFF

GAS SHUT OFF

HYDRANT

MANHOLES

SEWER — MHS

TELEPHONE — MHT

ELECTRICAL — MHE

GAS — MHG

UNKNOWN — U

TRAFFIC SIGNALS / ITS

existing PROPOSED

MAST ARM (existing) — 30' MA (NOTE ANGLE FROM ℄)

OPTICOM RECEIVER

OPTICOM STROBE

TRAFFIC SIGNAL

PEDESTAL WITH PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON UNIT

SIGNAL CONDUIT — C — PC

CONTROLLER CABINET — cc — CC

METER PEDESTAL — mp — MP

PULL BOX — pb — PB

LOOP DETECTOR (QUADRUPOLE) — (label size)

LOOP DETECTOR (RECTANGULAR) — (label size)

CAMERA POLE (CCTV)

FIBER OPTIC DELINEATOR — fod — FOD

FIBER OPTIC SPLICE VAULT — SVF

ITS EQUIPMENT CABINET — its — ITS

VARIABLE SPEED LIMIT SIGN

DYNAMIC MESSAGE SIGN

ROAD AND WEATHER INFO SYSTEM

CONSTRUCTION NOTES

CURB MARK NUMBER - BITUMINOUS — B-1

CURB MARK NUMBER - GRANITE — G-1

CLEARING AND GRUBBING AREA — A

DRAINAGE NOTE — 1

EROSION CONTROL NOTE — A

FENCING NOTE — A

GUARDRAIL NOTE — 1

ITS NOTE — 1

LIGHTING NOTE — A

TRAFFIC SIGNAL NOTE — 1

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9-1-2016	41352_WetStdSymb	41352	3	8

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER

WETLAND IMPACT LOCATION

WETLAND MITIGATION AREA

MITIGATION

WETLAND CLASSIFICATION CODES	
R2UB12	RIVERINE, LOWER PERENNIAL, UNCONSOLIDATED BOTTOM, COBBLE-GRAVEL-SAND
PFO1E	PALUSTRINE, FORESTED, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
L1UB2H	LACUSTRINE, LIMNETIC, UNCONSOLIDATED BOTTOM, SAND, PERMANENTLY FLOODED
BANK	BANK

EROSION CONTROL PLAN LEGEND

PC — PERIMETER CONTROL
SILT FENCE
EROSION CONTROL MIX BERM
EROSION CONTROL MIX SOX
TURBIDITY CURTAIN
SHEET PILE
COFFER DAM

NB/PC — NATURAL BUFFER/PERIMETER CONTROL
SILT FENCE
EROSION CONTROL MIX BERM
EROSION CONTROL MIX SOX
TURBIDITY CURTAIN
SHEET PILE
COFFER DAM

CP CP / CP CP — CHANNEL PROTECTION
STONE CHECK DAMS
STRAW WATTLES
CHANNEL MATTING
CLASS D EROSION STONE
CLASS C STONE

CWB CWB / CWB CWB — CLEAN WATER BYPASS
PUMP THROUGH PIPE
DRAIN THROUGH PIPE OR CHANNEL

WETLAND IMPACT SUMMARY

WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA IMPACTS							
			PERMANENT				TEMPORARY			
			N.H.W.B (NON-WETLAND) (BANK)		N.H.W.B AND A.C.O.E. (WETLAND)		N.H.W.B (NON-WETLAND) (BANK)		N.H.W.B AND A.C.O.E. (WETLAND)	
			SF	LF	SF	LF	SF	LF	SF	LF
1	R2UB12	A		56	263	26		24	147	12
3	PFO1E	B			5				134	
4	R2UB12	C			139	20			89	15
6	BANK	D	47	11			71	23		
7	BANK	E	194	27			125	10		
		Total	241	94	407	46	196	57	370	27

PERMANENT IMPACTS: 648 SF
TEMPORARY IMPACTS: 566 SF

TOTAL IMPACTS: 1214 SF

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED DATE
NEW DESIGN ZCS DATE 3/2018
SHEET CHECKED NAME3 DATE DATE3
AS BUILT DETAILS DATE

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET IMP	41352wetplans	41352	4	8

Lake
Winnipesaukee

1
GOULD,
ROBERT A.
& SUSAN S.

n/f
SPRINGHAVEN
REALTY CORP.

n/f
BENNETT FAMILY
LIVING TRUST &
JUDITH M. GREER
2001 TRUST

n/f
THAMBASH,
MICHAEL J
& ELLEN L.

Aqua Vue Lane

GRID N

5
L1UB2H

4
R2UB12

DRAINAGE
EASEMENT

CLEARING
LINE

SLOPE LINE

7
BANK

6
BANK

gravel drive

EXISTING R.O.W.

mb#1768

mb#1780

NH Rte 11

104 105 106 107 108

EL OUT = 506.47

EL OUT = 506.67

EL IN = 507.98

EL IN = 507.89

6'H x 10'W CONC BOX

4h x 3'w
Stone box
culvert

48" cmp

3
PF01E

B

A

1
R2UB12

Batchelder Brook

TOBOHW

mHOSOI

STA 105+51
BEGIN CONSTRUCT.

STA 106+34
END CONSTRUCT.

n/f
THE WILLIAM C.
MCCLELLAN SR.
LIVING TRUST

3
PF01E

2
PF01E

2
WALKER, STEVEN A.
DUPRAY, SUSAN

EXISTING POWER
LINE EASEMENT
PER PLAN L14-17

20 0 20 40
SCALE IN FEET

REVISIONS AFTER PROPOSAL

STATION	DESCRIPTION	STATION	DATE	NUMBER

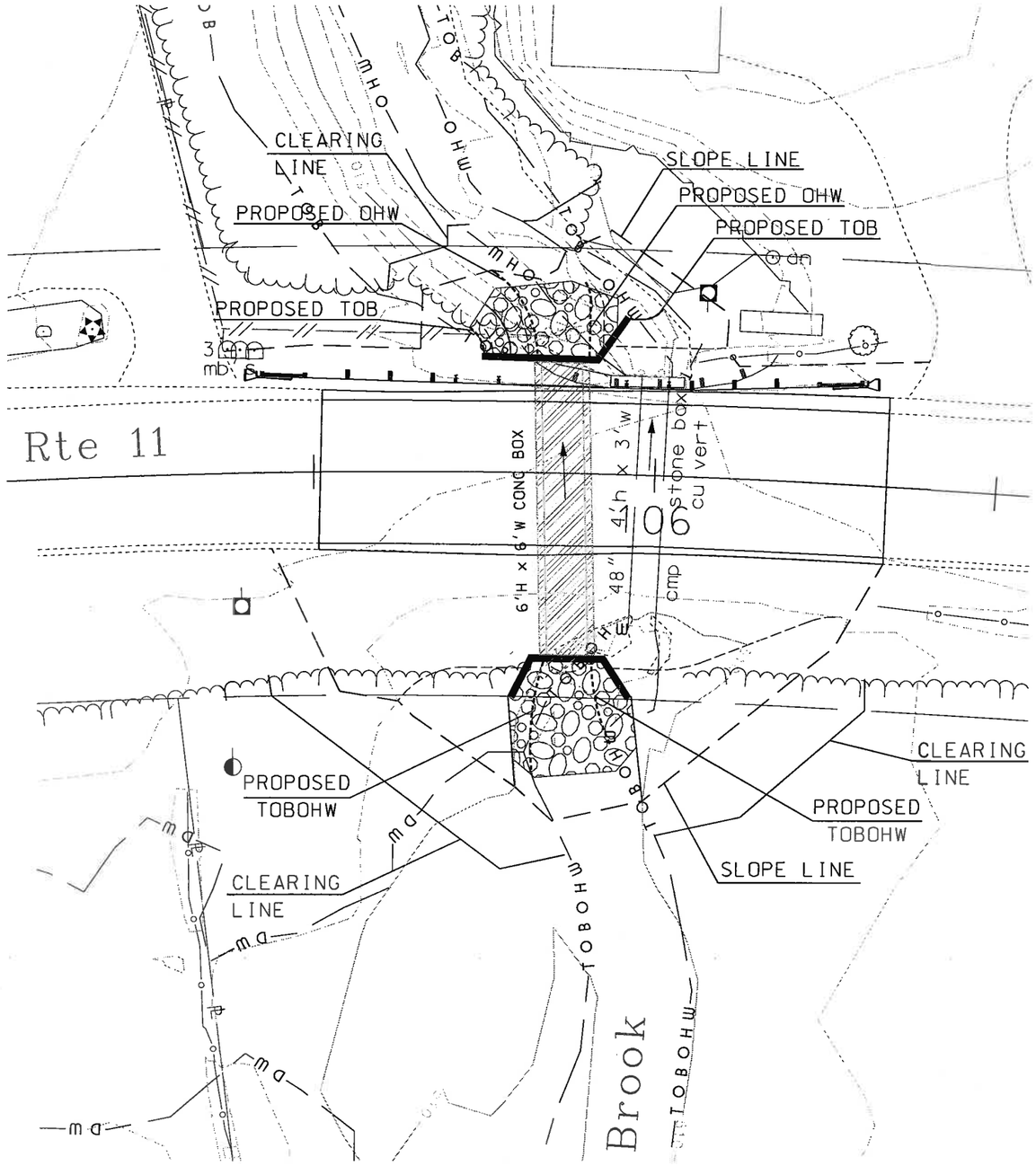
SDR PROCESSED DATE
NEW DESIGN ZCS DATE 03/2018
SHEET CHECKED NAME3 DATE DATE3

AS BUILT DETAILS DATE

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET01	41352wetplans	41352	5	8



10 0 10 20

SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED		DATE	
NEW DESIGN	ZCS	DATE	03/2018
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT DETAIL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET02	41352wetplans	41352	6	8

EROSION CONTROL STRATEGIES

1. ENVIRONMENTAL COMMITMENTS:
   - 1.1. THESE GUIDELINES DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH ANY CONTRACT PROVISIONS, OR APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
   - 1.2. THIS PROJECT WILL BE SUBJECT TO THE US EPA'S NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER CONSTRUCTION GENERAL PERMIT AS ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THIS PROJECT IS SUBJECT TO REQUIREMENTS IN THE MOST RECENT CONSTRUCTION GENERAL PERMIT (CGP).
   - 1.3. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NHDES WETLAND PERMIT, THE US ARMY CORPS OF ENGINEERS PERMIT, WATER QUALITY CERTIFICATION AND THE SPECIAL ATTENTION ITEMS INCLUDED IN THE CONTRACT DOCUMENTS.
   - 1.4. ALL STORM WATER, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION (DECEMBER 2008) (BMP MANUAL) AVAILABLE FROM THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES).
   - 1.5. THE CONTRACTOR SHALL COMPLY WITH RSA 485-A:17, AND ALL PUBLISHED NHDES ALTERATION OF TERRAIN ENV-WQ 1500 REQUIREMENTS (HTTP://DES.NH.GOV/ORGANIZATION/COMMISSIONER/LEGAL/RULES/INDEX.HTM)
   - 1.6. THE CONTRACTOR IS DIRECTED TO REVIEW AND COMPLY WITH SECTION 107.1 OF THE CONTRACT AS IT REFERS TO SPILLAGE, AND ALSO WITH REGARDS TO EROSION, POLLUTION, AND TURBIDITY PRECAUTIONS.

2. STANDARD EROSION CONTROL SEQUENCING APPLICABLE TO ALL CONSTRUCTION PROJECTS:
   - 2.1. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH DISTURBING ACTIVITIES. PERIMETER CONTROLS AND STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AS SHOWN IN THE BMP MANUAL AND AS DIRECTED BY THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARER.
   - 2.2. EROSION, SEDIMENTATION CONTROL MEASURES AND INFILTRATION BASINS SHALL BE CLEANED, REPLACED AND AUGMENTED AS NECESSARY TO PREVENT SEDIMENTATION BEYOND PROJECT LIMITS THROUGHOUT THE PROJECT DURATION.
   - 2.3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT AND SECTION 645 OF THE NHDOT SPECIFICATIONS FOR ROAD AND BRIDGES CONSTRUCTION.
   - 2.4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
     - (A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
     - (B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
     - (C) A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED;
     - (D) TEMPORARY SLOPE STABILIZATION CONFORMING TO TABLE 1 HAS BEEN PROPERLY INSTALLED
   - 2.5. ALL STOCKPILES SHALL BE CONTAINED WITH A PERIMETER CONTROL. IF THE STOCKPILE IS TO REMAIN UNDISTURBED FOR MORE THAN 14 DAYS, MULCHING WILL BE REQUIRED.
   - 2.6. A WATER TRUCK SHALL BE AVAILABLE TO CONTROL EXCESSIVE DUST AT THE DIRECTION OF THE CONTRACT ADMINISTRATOR.
   - 2.7. TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL REMAIN UNTIL THE AREA HAS BEEN PERMANENTLY STABILIZED.
   - 2.8. CONSTRUCTION PERFORMED ANY TIME BETWEEN NOVEMBER 30" AND MAY 1" OF ANY YEAR SHALL BE CONSIDERED WINTER CONSTRUCTION AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS.
     - (A) ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED IN ACCORDANCE WITH TABLE 1.
     - (B) ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
     - (C) AFTER NOVEMBER 30" INCOMPLETE ROAD SURFACES, WHERE WORK HAS STOPPED FOR THE SEASON, SHALL BE PROTECTED IN ACCORDANCE WITH TABLE 1.
     - (D) WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE PROJECT IS WITHOUT STABILIZATION AT ONE TIME, UNLESS A WINTER CONSTRUCTION PLAN HAS BEEN APPROVED BY NHDOT THAT MEETS THE REQUIREMENTS OF ENV-WQ 1505.02 AND ENV-WQ 1505.05.
     - (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WQ 1505.05) AND INCLUDING THE REQUIREMENTS OF NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30".

GENERAL CONSTRUCTION PLANNING AND SELECTION OF STRATEGIES TO CONTROL EROSION AND SEDIMENT ON HIGHWAY CONSTRUCTION PROJECTS

3. PLAN ACTIVITIES TO ACCOUNT FOR SENSITIVE SITE CONDITIONS:
   - 3.1. CLEARLY FLAG AREAS TO BE PROTECTED IN THE FIELD AND PROVIDE CONSTRUCTION BARRIERS TO PREVENT TRAFFICKING OUTSIDE OF WORK AREAS.
   - 3.2. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS.
   - 3.3. PROTECT AND MAXIMIZE EXISTING NATIVE VEGETATION AND NATURAL FOREST BUFFERS BETWEEN CONSTRUCTION ACTIVITY AND SENSITIVE AREAS.
   - 3.4. WHEN WORK IS PERFORMED IN AND NEAR WATER COURSES, STREAM FLOW DIVERSION METHODS SHALL BE IMPLEMENTED PRIOR TO ANY EXCAVATION OR FILLING.
   - 3.5. WHEN WORK IS PERFORMED WITHIN 50 FEET OF SURFACE WATERS (WETLAND, OPEN WATER OR FLOWING WATER), PERIMETER CONTROL SHALL BE ENHANCED CONSISTENT WITH SECTION 2.1.2.1. OF THE 2012 NPDES CONSTRUCTION GENERAL PERMIT.

4. MINIMIZE THE AMOUNT OF EXPOSED SOIL:
   - 4.1. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS. MINIMIZE THE AREA OF EXPOSED SOIL AT ANY ONE TIME. PHASING SHALL BE USED TO REDUCE THE AMOUNT AND DURATION OF SOIL EXPOSED TO THE ELEMENTS AND VEHICLE TRACKING.
   - 4.2. UTILIZE TEMPORARY MULCHING OR PROVIDE ALTERNATE TEMPORARY STABILIZATION ON EXPOSED SOILS IN ACCORDANCE WITH TABLE 1.
   - 4.3. THE MAXIMUM AMOUNT OF DISTURBED EARTH SHALL NOT EXCEED A TOTAL OF 5 ACRES FROM MAY 1" THROUGH NOVEMBER 30", OR EXCEED ONE ACRE DURING WINTER MONTHS, UNLESS THE CONTRACTOR DEMONSTRATES TO THE DEPARTMENT THAT THE ADDITIONAL AREA OF DISTURBANCE IS NECESSARY TO MEET THE CONTRACTORS CRITICAL PATH METHOD SCHEDULE (CPM), AND THE CONTRACTOR HAS ADEQUATE RESOURCES AVAILABLE TO ENSURE THAT ENVIRONMENTAL COMMITMENTS WILL BE MET.

5. CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT:
   - 5.1. DIVERT OFF SITE RUNOFF OR CLEAN WATER AWAY FROM THE CONSTRUCTION ACTIVITY TO REDUCE THE VOLUME THAT NEEDS TO BE TREATED ON SITE.
   - 5.2. DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM DISTURBED AREAS, SLOPES, AND AROUND ACTIVE WORK AREAS AND TO A STABILIZED OUTLET LOCATION.
   - 5.3. CONSTRUCT IMPERMEABLE BARRIERS AS NECESSARY TO COLLECT OR DIVERT CONCENTRATED FLOWS FROM WORK OR DISTURBED AREAS.
   - 5.4. STABILIZE, TO APPROPRIATE ANTICIPATED VELOCITIES, CONVEYANCE CHANNELS OR PUMPING SYSTEMS NEEDED TO CONVEY CONSTRUCTION STORMWATER TO BASINS AND DISCHARGE LOCATIONS PRIOR TO USE.
   - 5.5. DIVERT OFF-SITE WATER THROUGH THE PROJECT IN AN APPROPRIATE MANNER SO NOT TO DISTURB THE UPSTREAM OR DOWNSTREAM SOILS, VEGETATION OR HYDROLOGY BEYOND THE PERMITTED AREA.

6. PROTECT SLOPES:
   - 6.1. INTERCEPT AND DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM UNPROTECTED AND NEWLY ESTABLISHED AREAS AND SLOPES TO A STABILIZED OUTLET OR CONVEYANCE.
   - 6.2. CONSIDER HOW GROUNDWATER SEEPAGE ON CUT SLOPES MAY IMPACT SLOPE STABILITY AND INCORPORATE APPROPRIATE MEASURES TO MINIMIZE EROSION.
   - 6.3. CONVEY STORMWATER DOWN THE SLOPE IN A STABILIZED CHANNEL OR SLOPE DRAIN.
   - 6.4. THE OUTER FACE OF THE FILL SLOPE SHOULD BE IN A LOOSE RUFFLED CONDITION PRIOR TO TURF ESTABLISHMENT. TOPSOIL OR HUMUS LAYERS SHALL BE TRACKED UP AND DOWN THE SLOPE, DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE-RAKED, OR HAND-WORKED TO PRODUCE A RUFFLED SURFACE.

7. ESTABLISH STABILIZED CONSTRUCTION EXITS:
   - 7.1. INSTALL AND MAINTAIN CONSTRUCTION EXITS, ANYWHERE TRAFFIC LEAVES A CONSTRUCTION SITE ONTO A PUBLIC RIGHT-OF-WAY.
   - 7.2. SWEEP ALL CONSTRUCTION RELATED DEBRIS AND SOIL FROM THE ADJACENT PAVED ROADWAYS AS NECESSARY.

8. PROTECT STORM DRAIN INLETS:
   - 8.1. DIVERT SEDIMENT LADEN WATER AWAY FROM INLET STRUCTURES TO THE EXTENT POSSIBLE.
   - 8.2. INSTALL SEDIMENT BARRIERS AND SEDIMENT TRAPS AT INLETS TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.
   - 8.3. CLEAN CATCH BASINS, DRAINAGE PIPES, AND CULVERTS IF SIGNIFICANT SEDIMENT IS DEPOSITED.
   - 8.4. DROP INLET SEDIMENT BARRIERS SHOULD NEVER BE USED AS THE PRIMARY MEANS OF SEDIMENT CONTROL AND SHOULD ONLY BE USED TO PROVIDE AN ADDITIONAL LEVEL OF PROTECTION TO STRUCTURES AND DOWN-GRADIENT SENSITIVE RECEPTORS.

9. SOIL STABILIZATION:
   - 9.1. WITHIN THREE DAYS OF THE LAST ACTIVITY IN AN AREA, ALL EXPOSED SOIL AREAS, WHERE CONSTRUCTION ACTIVITIES ARE COMPLETE, SHALL BE STABILIZED.
   - 9.2. IN ALL AREAS, TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED IN ACCORDANCE WITH THE STABILIZATION REQUIREMENTS (SECTION 2.2) OF THE 2012 CGP. (SEE TABLE 1 FOR GUIDANCE ON THE SELECTION OF TEMPORARY SOIL STABILIZATION MEASURES.)
   - 9.3. EROSION CONTROL SEED MIX SHALL BE SOWN IN ALL INACTIVE CONSTRUCTION AREAS THAT WILL NOT BE PERMANENTLY SEEDED WITHIN TWO WEEKS OF DISTURBANCE AND PRIOR TO SEPTEMBER 15, OF ANY GIVEN YEAR, IN ORDER TO ACHIEVE VEGETATIVE STABILIZATION PRIOR TO THE END OF THE GROWING SEASON.
   - 9.4. SOIL TACKIFIERS MAY BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND REAPPLIED AS NECESSARY TO MINIMIZE SOIL AND MULCH LOSS UNTIL PERMANENT VEGETATION IS ESTABLISHED.

10. RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES:
    - 10.1. TEMPORARY SEDIMENT BASINS (CGP-SECTION 2.1.3.2) OR SEDIMENT TRAPS (ENV-WQ 1506.10) SHALL BE SIZED TO RETAIN, ON SITE, THE VOLUME OF A 2-YEAR 24-HOUR STORM EVENT FOR ANY AREA OF DISTURBANCE OR 3,600 CUBIC FEET OF STORMWATER RUNOFF PER ACRE OF DISTURBANCE, WHICHEVER IS GREATER. TEMPORARY SEDIMENT BASINS USED TO TREAT STORMWATER RUNOFF FROM AREAS GREATER THAN 5-ACRES OF DISTURBANCE SHALL BE SIZED TO ALSO CONTROL STORMWATER RUNOFF FROM A 10-YEAR 24 HOUR STORM EVENT. ON-SITE RETENTION OF THE 10-YEAR 24-HOUR EVENT IS NOT REQUIRED.
    - 10.2. CONSTRUCT AND STABILIZE DEWATERING INFILTRATION BASINS PRIOR TO ANY EXCAVATION THAT MAY REQUIRE DEWATERING.
    - 10.3. TEMPORARY SEDIMENT BASINS OR TRAPS SHALL BE PLACED AND STABILIZED AT LOCATIONS WHERE CONCENTRATED FLOW (CHANNELS AND PIPES) DISCHARGE TO THE SURROUNDING ENVIRONMENT FROM AREAS OF UNSTABILIZED EARTH DISTURBING ACTIVITIES.

11. ADDITIONAL EROSION AND SEDIMENT CONTROL GENERAL PRACTICES:
    - 11.1. USE TEMPORARY MULCHING, PERMANENT MULCHING, TEMPORARY VEGETATIVE COVER, AND PERMANENT VEGETATIVE COVER TO REDUCE THE NEED FOR DUST CONTROL. USE MECHANICAL SWEEPERS ON PAVED SURFACES WHERE NECESSARY TO PREVENT DUST BUILDUP. APPLY WATER, OR OTHER DUST INHIBITING AGENTS OR TACKIFIERS, AS APPROVED BY THE NHDES.
    - 11.2. ALL STOCKPILES SHALL BE CONTAINED WITH TEMPORARY PERIMETER CONTROLS. INACTIVE SOIL STOCKPILES SHOULD BE PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY EROSION CONTROL SEED MIX AND MULCH, SOIL BINDER) OR COVERED WITH ANCHORED TARPS.
    - 11.3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED IN ACCORDANCE WITH SECTION 645 OF NHDOT SPECIFICATIONS, WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.25 IN. OF RAIN PER 24-HOUR PERIOD. EROSION AND SEDIMENT CONTROL MEASURES WILL ALSO BE INSPECTED IN ACCORDANCE WITH THE GUIDANCE MEMO FROM THE NHDES CONTAINED WITHIN THE CONTRACT PROPOSAL AND THE EPA CONSTRUCTION GENERAL PERMIT.
    - 11.4. THE CONTRACTOR SHOULD UTILIZE STORM DRAIN INLET PROTECTION TO PREVENT SEDIMENT FROM ENTERING A STORM DRAINAGE SYSTEM PRIOR TO THE PERMANENT STABILIZATION OF THE CONTRIBUTING DISTURBED AREA.
    - 11.5. PERMANENT STABILIZATION MEASURES WILL BE CONSTRUCTED AND MAINTAINED IN LOCATIONS AS SHOWN ON THE CONSTRUCTION PLANS TO STABILIZE AREAS. VEGETATIVE STABILIZATION SHALL NOT BE CONSIDERED PERMANENTLY STABILIZED UNTIL VEGETATIVE GROWTH COVERS AT LEAST 85% OF THE DISTURBED AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL FOR ONE YEAR AFTER PROJECT COMPLETION.
    - 11.6. CATCH BASINS: CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT ENTER ANY EXISTING CATCH BASINS DURING CONSTRUCTION. THE CONTRACTOR SHALL PLACE TEMPORARY STONE INLET PROTECTION OVER INLETS IN AREAS OF SOIL DISTURBANCE THAT ARE SUBJECT TO SEDIMENT CONTAMINATION.
    - 11.7. TEMPORARY AND PERMANENT DITCHES SHALL BE CONSTRUCTED, STABILIZED AND MAINTAINED IN A MANNER THAT WILL MINIMIZE SCOUR. TEMPORARY AND PERMANENT DITCHES SHALL BE DIRECTED TO DRAIN TO SEDIMENT BASINS OR STORM WATER COLLECTION AREAS.
    - 11.8. WINTER EXCAVATION AND EARTHWORK ACTIVITIES NEED TO BE LIMITED IN EXTENT AND DURATION, TO MINIMIZE POTENTIAL EROSION AND SEDIMENTATION IMPACTS. THE AREA OF EXPOSED SOIL SHALL BE LIMITED TO ONE ACRE, OR THAT WHICH CAN BE STABILIZED AT THE END OF EACH DAY UNLESS A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY THE DEPARTMENT.
    - 11.9. CHANNEL PROTECTION MEASURES SHALL BE SUPPLEMENTED WITH PERIMETER CONTROL MEASURES WHEN THE DITCH LINES OCCUR AT THE BOTTOM OF LONG FILL SLOPES. THE PERIMETER CONTROLS SHALL BE INSTALLED ON THE FILL SLOPE TO MINIMIZE THE POTENTIAL FOR FILL SLOPE SEDIMENT DEPOSITS IN THE DITCH LINE.

BEST MANAGEMENT PRACTICES (BMP) BASED ON AMOUNT OF OPEN CONSTRUCTION AREA

12. STRATEGIES SPECIFIC TO OPEN AREAS LESS THAN 5 ACRES:
    - 12.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500: ALTERATION OF TERRAIN FOR CONSTRUCTION AND USE ALL CONVENTIONAL BMP STRATEGIES.
    - 12.2. SLOPES STEEPER THAN 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING.
    - 12.3. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT ALONE.
    - 12.4. AREAS WHERE HAUL ROADS ARE CONSTRUCTED AND STORMWATER CANNOT BE TREATED THE DEPARTMENT WILL CONSIDER INFILTRATION.
    - 12.5. FOR HAUL ROADS ADJACENT TO SENSITIVE ENVIRONMENTAL AREAS OR STEEPER THAN 5%, THE DEPARTMENT WILL CONSIDER USING EROSION STONE, CRUSHED GRAVEL, OR CRUSHED STONE BASE TO HELP MINIMIZE EROSION ISSUES.
    - 12.6. ALL AREAS THAT CAN BE STABILIZED SHALL BE STABILIZED PRIOR TO OPENING UP NEW TERRITORY.
    - 12.7. DETENTION BASINS SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE A 2 YEAR STORM EVENT.

13. STRATEGIES SPECIFIC TO OPEN AREAS BETWEEN 5 AND 10 ACRES:
    - 13.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES WILL BE UTILIZED.
    - 13.2. DETENTION BASINS WILL BE CONSTRUCTED TO ACCOMMODATE THE 2-YEAR 24-HOUR STORM EVENT AND CONTROL A 10-YEAR 24-HOUR STORM EVENT.
    - 13.3. SLOPES STEEPER THAN A 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS. OTHER ALTERNATIVE MEASURES, SUCH AS BONDED FIBER MATRIXES (BFMS) OR FLEXIBLE GROWTH MEDIUMS (FGMS) MAY BE UTILIZED, IF MEETING THE NHDES APPROVALS AND REGULATIONS.
    - 13.4. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS.

14. STRATEGIES SPECIFIC TO OPEN AREAS OVER 10 ACRES:
    - 14.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES AND BETWEEN 5 AND 10 ACRES WILL BE UTILIZED.
    - 14.2. THE DEPARTMENT ANTICIPATES THAT SOIL BINDERS WILL BE NEEDED ON ALL SLOPES STEEPER THAN 3:1, IN ORDER TO MINIMIZE EROSION AND REDUCE THE AMOUNT OF SEDIMENT IN THE STORMWATER TREATMENT BASINS.
    - 14.3. THE CONTRACTOR WILL BE REQUIRED TO HAVE AN APPROVED DESIGN IN ACCORDANCE WITH ENV-WQ 1506.12 FOR AN ACTIVE FLOCCULANT TREATMENT SYSTEM TO TREAT AND RELEASE WATER CAPTURED IN STORM WATER BASINS. THE CONTRACTOR SHALL ALSO RETAIN THE SERVICES OF AN ENVIRONMENTAL CONSULTANT WHO HAS DEMONSTRATED EXPERIENCE IN THE DESIGN OF FLOCCULANT TREATMENT SYSTEMS. THE CONSULTANT WILL ALSO BE RESPONSIBLE FOR THE IMPLEMENTATION AND MONITORING OF THE SYSTEM.

TABLE 1

GUIDANCE ON SELECTING TEMPORARY SOIL STABILIZATION MEASURES

APPLICATION AREAS	DRY MULCH METHODS				HYDRAULICALLY APPLIED MULCHES[2]				ROLLED EROSION CONTROL BLANKETS[3]			
	HMT	WC	SG	CB	HM	SMM	BFM	FRM	SNSB	DNSB	DNSCB	DNCB
SLOPES[1]												
STEEPER THAN 2:1	NO	NO	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES
2:1 SLOPE	YES[1]	YES[1]	YES	YES	NO	NO	YES	YES	NO	YES	YES	YES
3:1 SLOPE	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO
4:1 SLOPE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO
WINTER STABILIZATION	4T/AC	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES
CHANNELS												
LOW FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
HIGH FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNSCB	2 NET STRAW-COCONUT BLANKET
CB	COMPOST BLANKET	FRM	FIBER REINFORCED MEDIUM	DNCB	2 NET COCONUT BLANKET

NOTES:
1. ALL SLOPE STABILIZATION OPTIONS ASSUME A SLOPE LENGTH ≤10 TIMES THE HORIZONTAL DISTANCE COMPONENT OF THE SLOPE, IN FEET.
2. PRODUCTS CONTAINING POLYACRYLAMIDE (PAM) SHALL NOT BE APPLIED DIRECTLY TO OR WITHIN 100 FEET OF ANY SURFACE WATER WITHOUT PRIOR WRITTEN APPROVAL FROM THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
3. ALL EROSION CONTROL BLANKETS SHALL BE MADE WITH WILDLIFE FRIENDLY BIODEGRADABLE NETTING.

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL STRATEGIES

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	41352_ErosStrat	41352	7	8

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED NAME1 DATE DATE1
NEW DESIGN NAME2 DATE DATE2
SHEET CHECKED NAME3 DATE DATE3

AS BUILT DETAILS DATE

DRAINAGE EASEMENT
CLEARING LINE
SLOPE LINE
T O B
m H O
O H W
CWB
NB/PC
EL OUT = 506.47
EL OUT = 506.67
EL IN = 507.98
EL IN = 507.89
6'H x 6'W CONC BOX
4'h x 3'w stone box culvert
48" cmp
EXISTING R.O.W.
mb#1768
mb
NH Rte 11
105
107
Brook
GRID N

10 0 10 20
SCALE IN FEET

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC01	41352wetplans	41352	8	8